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A COMPILATION OF MOORED CURRENT DATA AND ASSOCIATED OCEANOGRAPH--ETC(U)

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A COMPILATION OF MOORED CURRENT DATA AND
ASSOCIATED OCEANOGRAPHIC OBSERVATIONS
VOLUME XII (1973 MID-OCEAN DYNAMICS EXPERIMENT (MODE))

WOODS HOLE OCEANOGRAPHIC INSTITUTION, MASSACHUSETTS

NOVEMBER 1976

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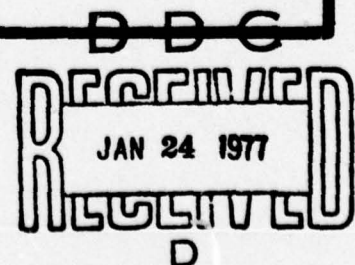
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Valentine Worthington
Valentine Worthington, Chairman
Department of Physical Oceanography

ABSTRACT

Summaries are presented of basic current, temperature and pressure measurements which were made from moored instruments as a part of the Mid-Ocean Dynamics Experiment (MODE) which took place March to July 1973.

Current data are presented as Basic Statistics, Spectral Diagrams, Progressive Vector Diagrams, East vs. North Plots, and Variables vs. Time Plots.

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PREFACE

This volume is the twelfth of a series of Data Reports presenting data collected by the W.H.O.I. Buoy Group.

- Volume I W.H.O.I. Ref. 65-44 (unpublished manuscript)
Webster, F., and N. P. Fofonoff, 1965
"A compilation of moored current meter observations, Volume I".
- Volume II W.H.O.I. Ref. 66-60 (unpublished manuscript)
Webster, F., and N. P. Fofonoff, 1966
"A compilation of moored current meter observations, Volume II".
- Volume III W.H.O.I. Ref. 67-66 (unpublished manuscript)
Webster, F., and N. P. Fofonoff
"A compilation of moored current meter observations, Volume III".
- Volume IV W.H.O.I. Ref. 70-40 (unpublished manuscript)
Pollard, R. T., 1970
"A compilation of moored wind and current meter observations, Volume IV".
- Volume V W.H.O.I. Ref. 71-50 (unpublished manuscript)
Tarbell, S., and F. Webster
"A compilation of moored current meter and wind observations, Volume V (1966 measurements)".
- Volume VI W.H.O.I. Ref. 74-7 (unpublished manuscript)
Tarbell, S., 1974
"A compilation of moored wind and current observations taken in 1967, Volume VI".
- Volume VII W.H.O.I. Ref. 74-52 (unpublished manuscript)
Chausse, D., and S. Tarbell, 1974
"A compilation of moored current meter and wind observations, Volume VII (1968 measurements)".
- Volume VIII W.H.O.I. Ref. 75-7 (unpublished manuscript)
Pollard, R. T., and S. Tarbell, 1975
"A compilation of moored current meter and wind observations, Volume VIII (1970 array experiment)".
- Volume IX W.H.O.I. Ref. 75-68 (unpublished manuscript)
Tarbell, S., M. G. Briscoe, and D. Chausse, 1976
"A compilation of moored current data and associated oceanographic observations, Volume IX (1973 Internal Wave Experiment (IWEX))".
- Volume X W.H.O.I. Ref. 76-40 (unpublished manuscript)
Tarbell, S., 1976
"A compilation of moored current data and associated oceanographic observations, Volume X (early 1969 measurements)".
- Volume XI W.H.O.I. Ref. 76-41 (unpublished manuscript)
Tarbell, S., 1976
"A compilation of moored current data and associated oceanographic observations, Volume XI (late 1969 measurements)".

Volume XII presents data from moored instruments collected as a part of the Mid-Ocean Dynamics Experiment (MODE).

ACKNOWLEDGMENTS

MODE constituted a major effort for all sections of the Buoy Group. Over 50 miles of mooring line with over 700 glass spheres and almost 200 instruments, including releases, radios and lights were set from the Research Vessel Chain in 12 days and recovered in 9 days. This was made possible by much hard work and good humor from everyone involved in the planning and execution of the MODE W.H.O.I. buoy moorings, including the R. V. Chain and her crew who were, as usual, dependable and helpful.

This report was prepared with the help of all members of the Data Processing section of the Buoy Group and in particular by Audrey Williams.

INTRODUCTION

The Mid-Ocean Dynamics Experiment (MODE) was a successful effort to measure large scale, slow moving physical ocean features with a wide variety of instruments. Additional MODE objectives include determining the effects of bottom topography on the mesoscale motions and comparing the interpretation of data gathered from the different types of instruments. MODE was planned as a series of concurrent experiments where each instrument type would comprise an experiment of its own as well as be an addition to the MODE data array.

The W.H.O.I. moorings were only one part of the MODE program. SOFAR floats, airdropsondes, vertical profilers, STDs and tow fish all had experiments of their own. The Institute of Oceanographic Sciences in England and the University of Rhode Island set additional moored current meter stations. The bottom experiment added pressure gauges, electromagnetic transport meters, inverted echo sounders, magnetic field detectors and detectors which measure the vertical component of the electric field to the instrument array.

The active field work involved the crews and scientists aboard six ships and three airplanes which covered the MODE area (Bermuda Triangle) for four months gathering the data from these assorted instruments. An uncounted number of people worked before, during and after MODE towards obtaining high quality data.

For information on other aspects of the MODE project see the following appendixes:

- Appendix I List of the participating institutions and principal investigators by project.
- Appendix II List of papers about MODE by MODE Contribution Number.
- Appendix III List of contributions to the MODE Hot-Line News.

This report presents the data gathered on the W.H.O.I. buoy moorings by current meters and temperature/pressure recorders plus mean CTD temperature and salinity data taken during the mooring recovery phase of the operation.

Hydrography

Ten CTD stations were made on the buoy recovery cruise of the Research Vessel Chain, cruise 112, Leg 6. The CTD was designed by Neil Brown (Brown, 1975; Fofonoff, Hayes and Millard, 1974) and measures conductivity, temperature and pressure. Temperature and salinity profiles, spatially averaged over ten CTD stations, are shown in Fig. 1 (Millard and Bryden, 1973).

Moorings

There were 16 subsurface moorings set and retrieved by the Woods Hole Oceanographic Buoy Group for the MODE array. A seventeenth mooring, the only surface mooring, was set as a reference marker to indicate the center of the MODE area at 28° 00'N, 69° 10'W. This mooring was considered lost after May 23.

The sixteen subsurface moorings had the same basic design with current meters and temperature/pressure recorders shackled into the mooring line at designated depths. Jacketed 3/16" wire was used for the top of the mooring line which was in the fishbite zone. Below the fishbite zone 3/8" dacron was used. The flotation was provided by 16" and 17" glass spheres in hard hat clusters which were attached at intervals along the mooring line. Details on moorings, components and procedures may be found in Heinmiller (1973a), Heinmiller (1973b) and Heinmiller (1975).

Table 1 lists the MODE mooring number, the W.H.O.I. mooring number and the times and location of launch and retrieval.

Figure 2 is a map showing mooring positions and bottom topography.

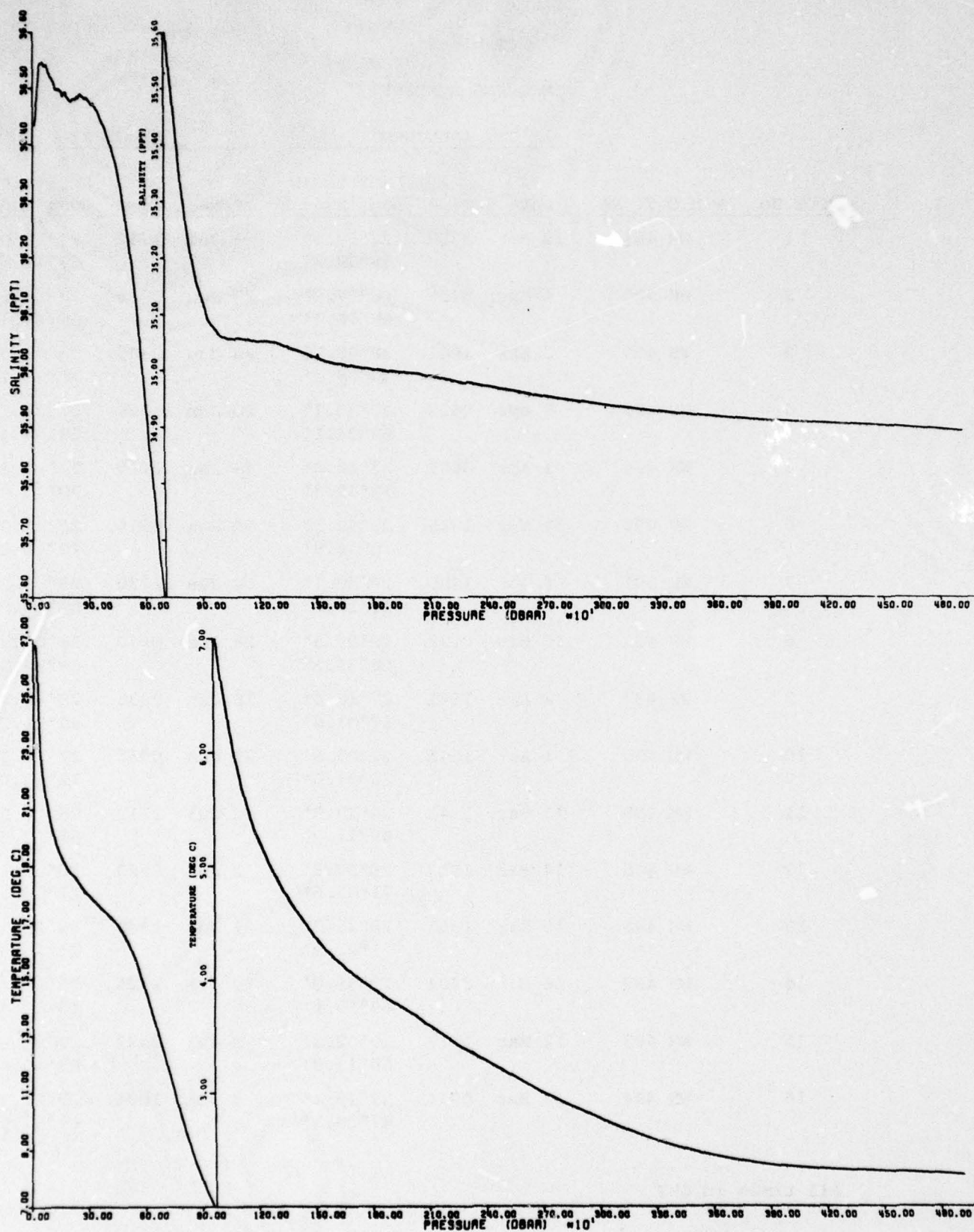


Figure 1. Plots of salinity and temperature from 10 CTD stations

Table 1

MOORING SUMMARY

MODE No.	W.H.O.I. No.	LAUNCHED			RECOVERED		
		Date	Time	Latitude N Longitude W	Date	Time	Latitude N Longitude W
1	WH 481	10 Mar	2358	27°59.8' 69°39.0'	4 Jul	1552	27°58.0' 69°41.6'
2	WH 500	4 Apr	0436	28°17.0' 69°16.3'	27 Jun	0829	28°16.5' 69°16.7'
3	WH 499	3 Apr	1641	28°08.98' 70°08.1'	28 Jun	0305	28°09.0' 70°08.1'
4	WH 498	3 Apr	0623	27°33.1' 69°34.1'	28 Jun	1138	27°33.1' 69°34.1'
5	WH 494	1 Apr	0807	27°49.8' 70°39.8'	29 Jun	2219	27°49.3' 70°39.9'
6	WH 493	31 Mar	1815	28°42.0' 70°15.8'	30 Jun	0514	28°41.8' 70°16.2'
7	WH 501	4 Apr	1200	28°50.1' 69°18.0'	30 Jun	1730	28°50.5' 69°19.0'
8	WH 482	12 Mar	0131	28°09.3' 68°39.3'	26 Jun	0940	28°09.3' 68°38.5'
9	WH 497	2 Apr	1641	27°18.0' 69°01.0'	28 Jun	2336	28°18.4' 69°01.2'
10	WH 495	1 Apr	1645	27°08.8' 70°00.0'	29 Jun	0955	27°08.5' 70°01.0'
11	WH 485	13 Mar	2241	26°23.8' 69°21.0'	2 Jul	2113	26°23.8' 69°20.6'
12	WH 486	14 Mar	1513	26°57.5' 71°02.6'	2 Jul	0523	26°55.5' 71°06.5'
13	WH 488	15 Mar	1516	28°33.1' 71°22.9'	1 Jul	1348	28°29.3' 71°23.9'
14	WH 489	16 Mar	0434	29°35.0' 69°59.1'	30 Jun	2325	29°36.4' 69°59.4'
15	WH 483	12 Mar	1519	29°02.3' 68°13.8'	3 Jul	2322	29°02.6' 68°14.0'
16	WH 484	13 Mar	0834	27°25.1' 67°59.5'	3 Jul	1004	27°22.7' 67°57.9'

All times in GMT

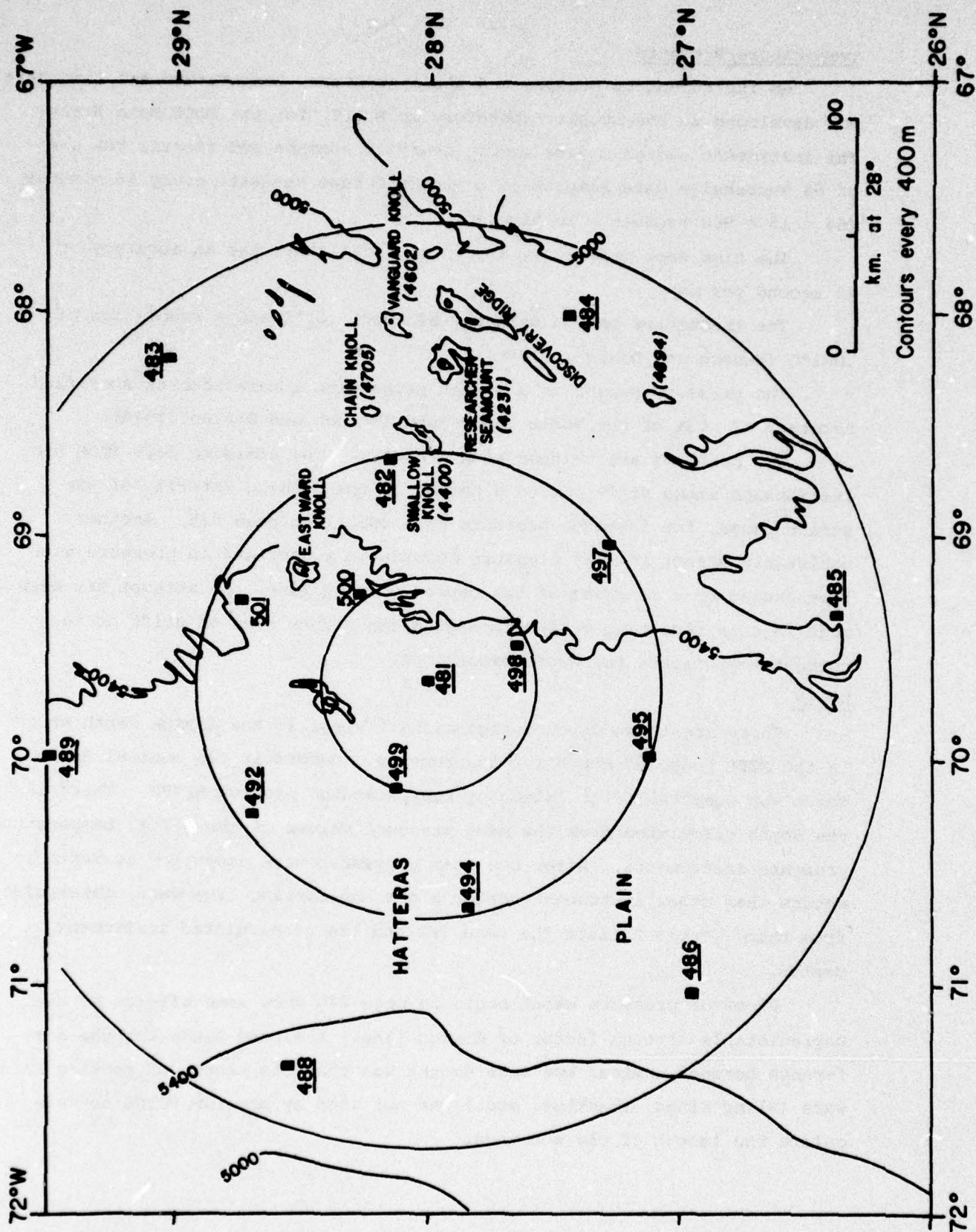


Figure 2. Mooring Location

Temperature/Pressure

An instrument to measure and store pressure, temperature and time data was developed in the Draper Laboratory at M.I.T. for the MODE Data Array. The instrument stores a data sample every 15 seconds and records the sum of 64 successive data samples on a magnetic tape cassette every 16 minutes ($64 \times 15 = 960$ seconds = 16 minutes).

The time base generator, a crystal oscillator, has an accuracy of ± 1 second per day.

The thermistor has an accuracy of about $.01^{\circ}\text{C}$ and a resolution of $.001^{\circ}\text{C}$ (Wunsch and Dahlen, 1974).

The pressure sensor is a strain gauge with a manufacturer specified accuracy of .03% of the scale range used (Wunsch and Dahlen, 1974).

Two problems are evident with T/P data. The pressure data from some instruments shows drift due to a change in the bonding material of the strain gauge, for instance pressure data 485,11 on page 235. Another noticeable effect in many pressure records is a decrease in pressure with time caused by stretching of the dacron mooring line. No attempt has been made in this report to correct pressure for either type of drift or to correct temperature for depth excursions.

Depth

There are three depth designations. First is the design depth which is the MODE proposed depth for instruments. Second is the nominal depth which was computed after launch by buoy computer program NOYFB. Third is the depth calculated from the mean pressure values of the M.I.T. temperature/pressure instruments. After the mean pressures were converted to depth in meters then other instrument depths along the mooring line were interpolated from them. Table 2 lists the mean T/P and the recalculated instrument depths.

Plots of pressure which begin on page 240 show some effects of the unpredictable stretch factor of dacron line. A second cause for the difference between nominal and mean depths was that the length of mooring hardware (sling rings, shackles, etc.) was not used by program NOYFB to calculate the length of the moorings.

Table 2

Instrument Depth Derived from Mean Pressure Data

W. H. O. I. MOORING NUMBER

	481	482	483	484	485	486	488	489	493	494	495	497	498	499	500	501
500	391	406	447	441	421	415	419	404	408	391	452	374	413	427	379	421
600	490	507	550	543	520		521	507	512	492	554	478	513	531	485	523
800	697	706	750	744	723	715	719	708	709	691	753	676	713	728	681	723
1000	897	911							908	893		880	914	933	882	
1200	1095				1133							1080				
1500	1392	1411	1450	1443	1426	1420	1429	1414	1410	1395	1452	1381	1414	1428	1382	1425
2000					1926											
2500	2396				2442							2392				
3000	2919	2936	2960	2953	2943	2940	2952	2936	2933	2924	2959	2913	2933	2945	2914	2936
3500	3437											3433				
4000	3963	3957	3968	3973	3981	3948	3972	3959	3957	3954	3962	3940	3948	3956	3936	3951
4400	4382				4387							4346				
B -100	5345	5128	5087		5317	5392	5226	5339	5347	5346	5374	5185				5297

(E) H F N D E P T H

Time

Most data presented from T/Ps, 850s and VACMs used a quartz crystal oscillator with a manufacturer's specified accuracy of ± 1 second per day. MODE current meters using crystal clocks had times within 4 minutes of the correct time. More than half of the current meters had a crystal clock error of less than 1 minute over the 130 day operating period. Mechanical clock accuracy was up to two hours off over the same time period.

Clock accuracy is derived by comparing the instrument indicated elapsed time from clock reset to the elapsed time according to radio time stations WWV or CHU.

A second method for determining time accuracy is to place timed real events in the data.

The procedure for putting real time events in current meter data is as follows. The current meters are sent to sea with their rotors and vanes immobilized by taping them to the instrument case. At sea, after the recorder is turned on and has recorded several records, the rotor is untaped and spun during two consecutive record cycles, then taped again. Just before launch both rotor and vane are untaped. The times of the two spins and the final untaping are carefully noted. For retrieval the procedure is the reverse. First tape the rotor and vane, then untape and spin, then retape the sensors so that the record ends with an immobilized rotor and vane.

The real time of these events can be compared with the computed time of the events to determine clock accuracy. To determine clock drift the clock is reset to zero before launch at a known time (usually according to radio time signals WWV or CHU). After recovery a time word is read from the instrument and the time the instrument started recording the record is noted. If the instrument time word matches the real elapsed time then the clock drift is the time, usually in seconds, between when the instrument should have started recording and when it actually did start recording. Instruments with good mechanical clocks could also use the real time events to determine clock drift.

In this report time is read as year-month-day hour,minute,second.

Current Meters

Eighty-four current meters were set and retrieved by the W.H.O.I. Buoy Group during MODE. One instrument, the only wind recorder, is presumed stolen as it was on our missing MODE Center surface mooring. Sixty-two of the instruments were Vector Averaging Current Meters (VACMs) built by American Machine and Foundry (AMF). Three instruments were prototype Vector Averaging Current Meters built by Geodyne now a part of Edgerton, Germeshausen and Grier (EG&G). Thirteen Model 850 current meters were also built by Geodyne as were 4 film recording current meters. An additional film recording current meter was loaned by the U. S. Navy. The following institutions contributed current meters: W.H.O.I. (63), I.O.S. (7), U.R.I. (9), Nova University (4) and U. S. Navy (1).

Current Meter Types

The VACM (Vector Averaging Current Meter) gathers compass and vane information and computes E and N components each time a pair of rotor magnets passes the sensing diode and sums these components through the entire recording interval. There are 16 magnets on the rotor so one complete rotor revolution would cause eight compute cycles. The pulses out of the V/F converter, whose output frequency is related to the thermistor resistance at its input, are summed over the recording interval. In the decoding these numbers are converted to mean temperatures. The variables are recorded on a cassette tape at the end of each recording interval.

The Model 850 current meter stores burst sampled data on magnetic tape cartridges. For MODE, each Model 850 that had a crystal clock collected and stored 13 current samples at a 5.27 second sampling rate then turned off for the remainder of the 30 minute cycle. Those Model 850s that were modified to measure temperature store the output count from the temperature circuit for one 5.19 second period at the beginning of each 30 minute interval. Model 850 instruments that used mechanical clocks to measure time collected current information only. Their 13 compass, vane and rotor samples were of 5 second duration each in the 30 minute interval.

Data from the five instruments that recorded on film and also used mechanical clocks are not presented in this report.

Current Meter Problems

The VACMs had two types of instrument failure during MODE. Figure 3 is a current record from MODE with both types of failure. One problem was a chemical deposition in the rotor and vane bearings which hampered the movement of the sensor. The other problem was a diode drifting in and out of its sensing range causing varying and unknown quantities of rotor occurrences to be ignored.

The chemical deposition problem (Dexter, Milliman and Schmitz, 1975) was solved by isolating the bearings so they would no longer be cathodic crevices.

The rotor drop out problem was an electrical one. The semiconductor magneto-diodes sense rotation as magnet pairs attached to the rotor pass by them. The voltage drop across these diodes varies with the magnetic field. As the rotor turns an ac signal is produced. This signal, low in amplitude (about 40 millivolts peak-to-peak), is superimposed on a 6 1/2 volts dc level and balanced by an offset control in the amplifier. This design proved to be unstable; changes in temperature, pressure, and time caused the dc signal to drift. When the signal drifted out of sensing range the turning rotor went undetected. Adding an ac coupled amplifier to the instrument after MODE eliminated the drift sensitivity and the resultant loss of rotor data. It also made the rotor axial adjustment less critical.

The five Model 850 current meter failures were caused by unrelated problems.

All five film instruments had related problems. First the mechanical readout of the film was not very accurate in either the data reading or the time domain. One film was reread at W.H.O.I. by eye. When compared to the mechanical reading it proved that some data records had not been read and that a few sections of data had been moved out of sequence and reinserted later in the record. A second problem was the accuracy of the time base which relates partly to the first problem and partly to the inaccuracies of mechanical clocks.

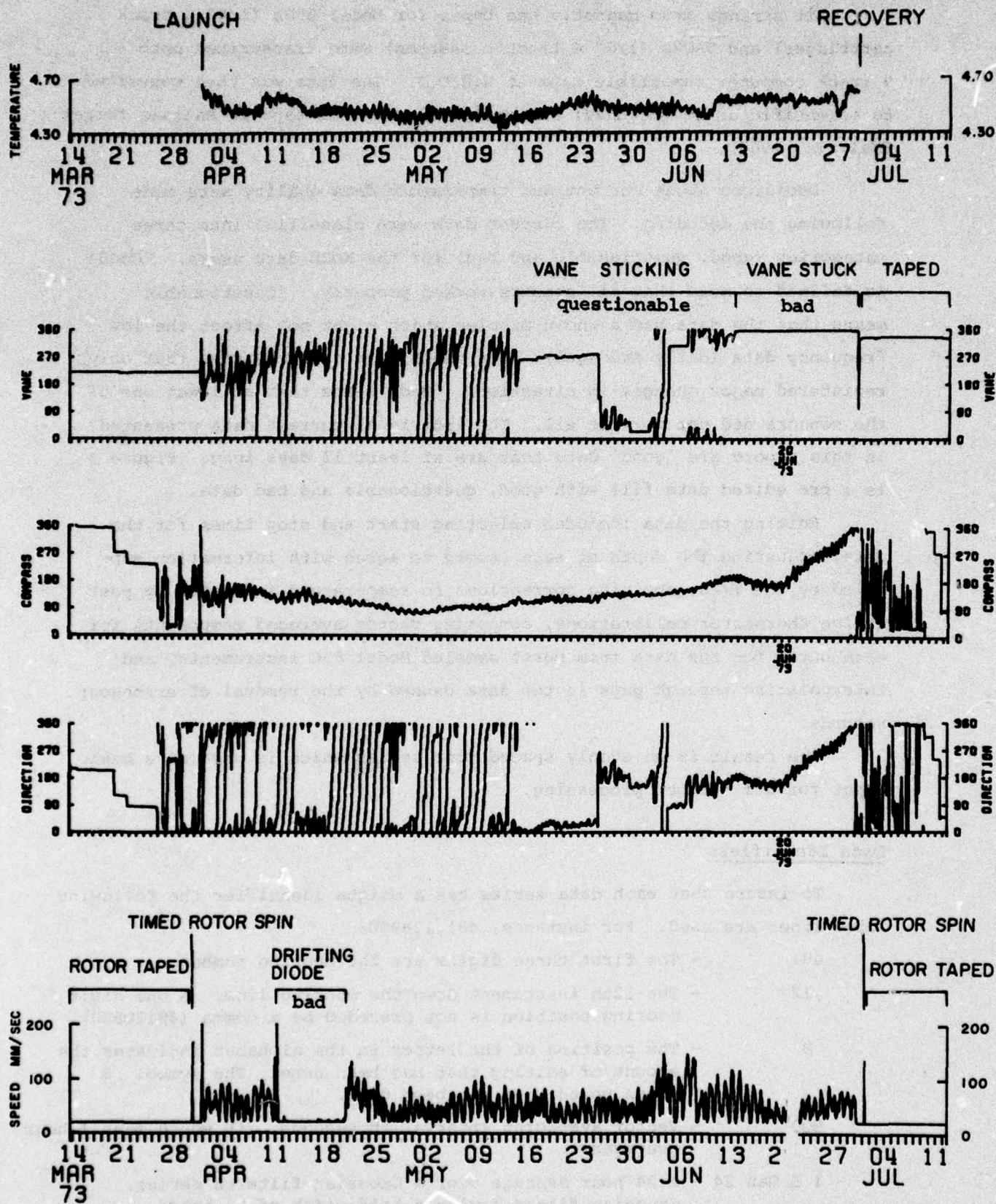


Figure 3. VACM data with instrument problems

Data Processing

Bit strings from magnetic sea tapes for Model 850s (1/4" 2 track cartridges) and VACMs (1/8" 4 track cassettes) were transcribed onto 9 track computer compatible tape at W.H.O.I. The data was then converted to scientific units (decoded) and stored on magnetic tape in Maltais format (Maltais, 1969).

Decisions about current and temperature data quality were made following the decoding. The current data were classified into three categories (good, questionable and bad) for the MODE data users. "Good" is defined to mean that all sensors worked properly. 'Questionable' means that the data had a known problem which might not affect the low frequency data (daily averages). One example is a sticky vane that only registered major changes in direction. 'Bad' means that at least one of the sensors did not work at all. The individual current data presented in this report are 'good' data that are at least 13 days long. Figure 3 is a pre edited data file with good, questionable and bad data.

Editing the data included selecting start and stop times for the data, adjusting the depth of each record to agree with information supplied by the T/Ps, applying corrections to temperature indicated by post cruise thermistor calibrations, computing vector averaged components for each burst for the data from burst sampled Model 850 instruments, and interpolating through gaps in the data caused by the removal of erroneous records.

The result is an evenly spaced time series which is used as a basic input for all further processing.

Data Identifiers

To insure that each data series has a unique identifier the following guide lines are used. For instance, 481,12B900:

- 481 - The first three digits are the mooring number.
- ,12 - The 12th instrument down the mooring line. A one digit mooring position is not preceded by a comma (4812D900).
- B - The position of the letter in the alphabet indicates the amount of editing that has been done. The symbol \$ means no editing has been done.
- 900 - Vector averaging interval in seconds. 1H would mean 1 hour averages.
- 1 d Gau 24 - A 24 hour average over a Gaussian filtered series, Gaussian filter having a half width of 24 hours.

Data Presentation

The data are presented three ways: data from individual current meters are arranged by data number; current meter and temperature/pressure data are displayed as composites by mooring; current vectors are displayed as arrays by depth.

The first section presents current meter data ordered by mooring and instrument position numbers. Each mooring has two pages on which are presented a description and a diagram of the mooring.

The following abbreviations and symbols are used:

*	Current meter data presented
#	T/P data, presented in Data Section 2
+	Temperature only, presented in Data Section 2
850t	Model 850 with temperature modification
FCM	Film recording current meter
Film	Film recording current meter (Navy)
I.O.S.	Institute of Oceanographic Sciences, formerly N.I.O.
U.R.I.	University of Rhode Island
M.I.T.	Massachusetts Institute of Technology
T/P	M.I.T. temperature/pressure recorder
VACM	Vector Averaging Current Meter

Following the mooring information are sets of four pages that display data for each current meter that had 'good' current data (Figure 4). Each set of four pages includes data sampling information, the quality of the various variables, a list of general statistical parameters, and four plots: a scatter plot of U vs. V , a spectral plot, a progressive vector plot and a plot of temperature, U , V , speed and direction vs. time. Temperature is plotted for the time period of good current data.

In Section 2 the current meter and T/P data are presented as a series of composite plots. Both CM and T/P temperature data (Table 3) are subsampled and plotted by mooring number and increasing depth. Pressure data are also subsampled and plotted by mooring number and increasing depth. The temperature and pressure data for each mooring are displayed on facing pages to facilitate comparisons. Stick diagrams of U and V are plotted from 1 day Gaussian filtered data and presented by mooring and increasing depth.

Geographic displays of 4-day averaged current vectors are presented by depth and time.

Table 3

Position Numbers of Presented Pressure Data

W. H. O. I. MOORING NUMBER

	481	482	483	484	485	486	488	489	493	494	495	497	498	499	500	501
500																
600	4	2	2	2	2	-	2	2	2	2	2	2	2	2	2	2
800	6	-	4	4												
1000	7	4						4	4	4	-	4	4	4	4	
1200	8				5							5				
1500																
2000	10				7							8				
2500	11				8											
3000	13															
3500	14											10				
4000						6	6	6	7	7	7		7	7		
4400	17				11							12				
B -100	19		8									14				

Design Depth (m)

xx

Position Numbers of Presented Temperature Data

	1,2	3,4	5,6	7	8	9	10	11	12,13	14	17	19
500	1	1	1	1	1	1	1	1	1	1	1	1
600	2	2	2	2	2	2	2	2	2	2	2	2
800	3	3,4	3	3	3	3	3	3	3	3	3	3
1000	4		4	4	4	4	4	4	4	4	4	4
1200	5		5	5	5	5	5	5	5	5	5	5
1500	6		6	6	6	6	6	6	6	6	6	6
2000	7		7	7	7	7	7	7	7	7	7	7
2500	8		8	8	8	8	8	8	8	8	8	8
3000	9		9	9	9	9	9	9	9	9	9	9
3500	10		10	10	10	10	10	10	10	10	10	10
4000	11		11	11	11	11	11	11	11	11	11	11
4400	12		12	12	12	12	12	12	12	12	12	12
B -100	13		13	13	13	13	13	13	13	13	13	13

Design Depth (m)

Data name is mooring number plus instrument position number. Therefore the data gathered on mooring 485 by the instrument at 2500 meters is identified by the name 4858.

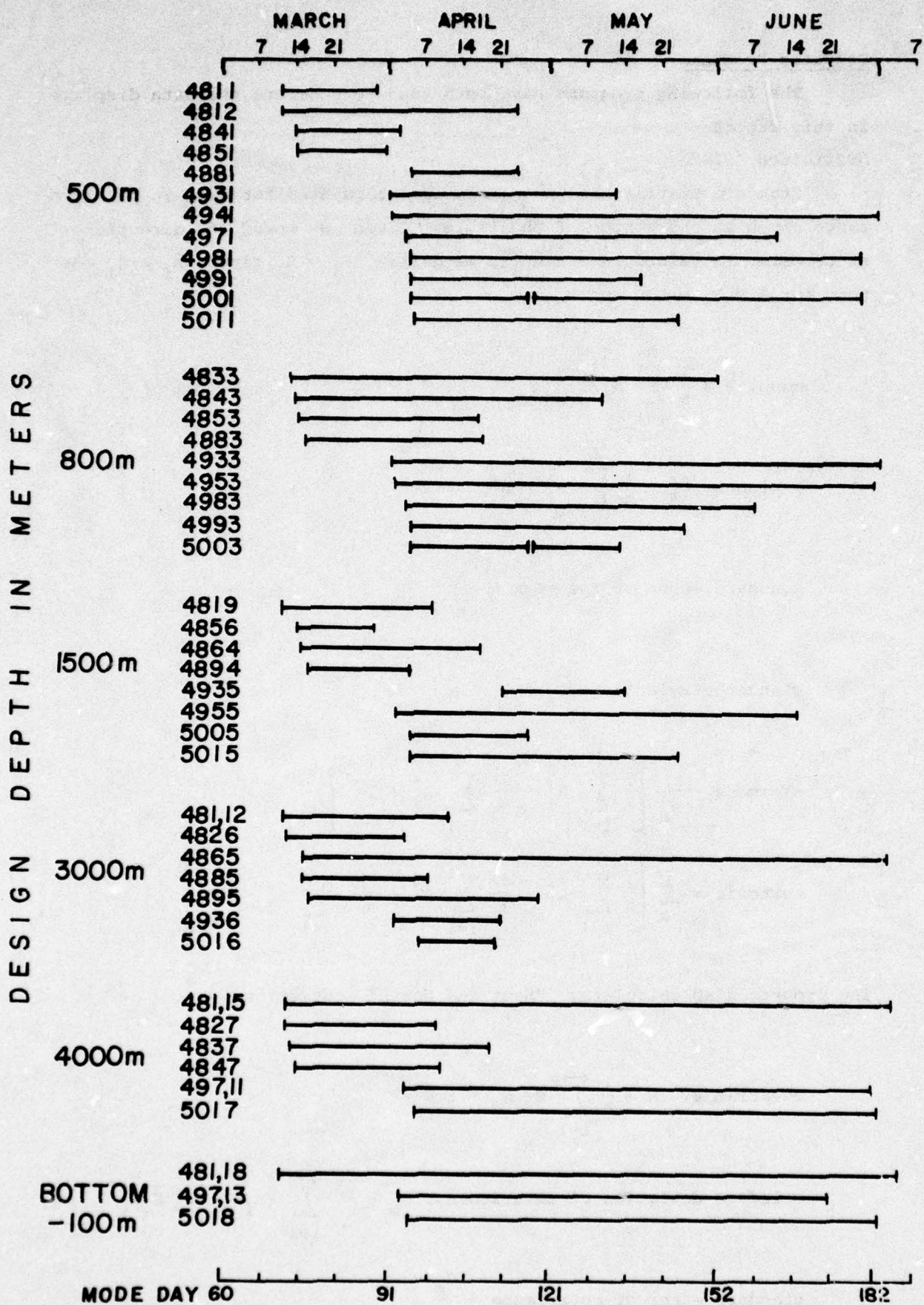


Figure 4. Duration of current data

Computer Programs

The following programs have been used to generate the data displays in this report:

Statistics (STATS)

Standard statistical parameters are calculated for data in the time range given at the bottom of the table. Given n speed and direction or temperature values in a sample, we define $E_i = S_i \sin \theta_i$, $N_i = S_i \cos \theta_i$, then for $A = E, N, S$, and T ,

$$\text{mean, } \bar{A} = \frac{1}{n} \sum_{i=1}^n A_i$$

$$\text{variance, } \sigma_A^2 = \frac{1}{n} \sum_{i=1}^n A_i^2 - \bar{A}^2$$

$$\text{standard error of the mean} = \frac{\sigma_A}{\sqrt{n}}$$

$$\text{standard deviation} = \sigma_A$$

$$\text{skewness} = \frac{1}{\sigma_A^3} \left[\frac{1}{n} \sum_{i=1}^n A_i^3 - \frac{3\bar{A}}{n} \sum_{i=1}^n A_i^2 + 2\bar{A}^3 \right]$$

$$\text{kurtosis} = \frac{1}{\sigma_A^4} \left[\frac{1}{n} \sum_{i=1}^n A_i^4 - \frac{4\bar{A}}{n} \sum_{i=1}^n A_i^3 + \frac{6\bar{A}^2}{n} \sum_{i=1}^n A_i^2 - 3\bar{A}^4 \right]$$

The program also calculates "East and North" statistics,

$$\text{covariance, } M = \frac{1}{n} \sum_{i=1}^n E_i N_i - \bar{E} \bar{N}$$

$$\text{standard deviation of covariance, } \sigma_m = \frac{1}{n} \sum_{i=1}^n (E_i N_i)^2 - \overline{E_i N_i}^2$$

$$\text{standard error of covariance} = \frac{\sigma_m}{\sqrt{n}}$$

correlation coefficient, $M' = \frac{M}{\sigma_E \sigma_N}$.

The program also calculates parameters related to vector quantities: the scalar amplitude of the vector mean, $V_m = \sqrt{E^2 + N^2}$; vector variance, $V_v^2 = \frac{1}{2} (\sigma_E^2 + \sigma_N^2)$; standard deviation = V_v .

Scatterplot

The vector components are plotted against each other to give a pictorial indication of the DIRECTION and SPEED of the velocity vectors. This type plot can be helpful in finding instrument malfunctions and characteristics not easily noticed elsewhere.

Progressive Vector Diagram (PROVEC)

The vector progressive displacements are plotted. The plot begins with an asterisk (*) on a day boundary. All following day boundaries are indicated with a (+). This type of plot accentuates very low frequency events at the expense of higher frequency oscillations which may be hidden by a large amplitude low-frequency current.

Variable vs. Time Plot

This is a diagram of any variable plotted as a function of TIME. The plot is generated from the 1 hour averaged series. This type of plot is complementary to the PROGRESSIVE VECTOR diagram since it accentuates higher frequency events such as inertial and tidal oscillations.

Spectra

The program TIMSAN (Time Series Analysis) uses the Fast Fourier Transform algorithm of Singleton (1969) and is restricted to data segments of length N points, where N must be an even number which has no prime factor larger than 5, and must be less than 8000 points; data series longer than this must be broken into two or more pieces.

The number of degrees of freedom for the first 40 plotted points is given by $v = a m s$ where m is the number of adjacent frequency bands being averaged as stated in the label, s is the number of independent data pieces being averaged, again as stated in the label, and a should be two for temperature spectra and for Horizontal Kinetic Energy [HKE] spectra for which the EAST and NORTH components seem statistically

independent. In the absence of information regarding NORTH-EAST correlation, one should use $a = 2$ to be safe.

The log-log plot is further averaged during plotting so that more and more points are averaged together as frequency increases. This eliminates the bunching together of points at high frequencies, increases the degrees of freedom of the high frequency estimates, and still permits low-frequency resolution. The averaging algorithm is as follows: counting from the left of the plot, the first 40 plotted points represent data that has been averaged as stated in the label; the data for the next 15 plotted points has been averaged over twice as many frequency bands; the next 6 over five times as many, the next 40 over ten times as many, the next 15 over twenty times as many, the next 6 over fifty times as many, the next 40 over 100 times as many and so on. In this way, for example, 7900 data points with no averaging indicated in the label would be plotted as only 176 points, and the last 14 estimates would be averaged over 200 basic frequency bands. The m in the formula $v = a m s$ for degrees of freedom is, in this example, 200 times larger at the highest frequencies than at the lowest frequencies.

For $v > 30$, the confidence limits for the spectral estimates are given approximately by $(1 - 2/9v \pm Z\sqrt{2/9v})^{1/3}$ where $Z = 1.28375$ for 80% confidence limits, $Z = 1.645$ for 90%, $Z = 1.96$ for 97% and $Z = 2.5757$ for 99%. In the example above, if the HKE spectral plot label had indicated 2 pieces and averaging over 8 adjacent frequency bands then $v = 2 \times 2 \times 8 = 32$ for the lowest frequencies (assuming NORTH and EAST components are highly correlated) and $200 \times 32 = 6400$ for the highest frequencies. The 95% confidence intervals (i.e., 95% of the time one would expect the spectral estimates to vary no more than this much) would be (0.57, 1.55) at low frequencies, and (0.97, 1.03) at high frequencies.

For $v \leq 30$, one must obtain confidence intervals from Chi-Squared distribution tables in standard statistical references.

Temperature spectra from 850 current meters show aliasing at high frequencies because of the sampling scheme. Speed and direction are burst sampled 14 times per recording interval. These 14 samples are vector averaged to attenuate high frequency aliasing in the current measurement. There is only one 5.19 second temperature sample per recording interval, however. The temperature spectrum for data series 497,11 shows clearly the resulting high frequency aliasing. In contrast, the VACM averages all variables over the full recording interval, virtually eliminating the problem.

Stick Plot

The basic U and V time series is filtered using a symmetrical running Gaussian filter with a half-width of 24 hours followed by a simple running hat filter. The filtering is sequential and the resultant time series is 48 hours shorter than the input time series (The first and last 24 hours are lost.). Each consecutive plotted vector is the result of a 24 hour average running from midnight to midnight. Vector direction follows normal direction conventions, i.e., north is up.

References

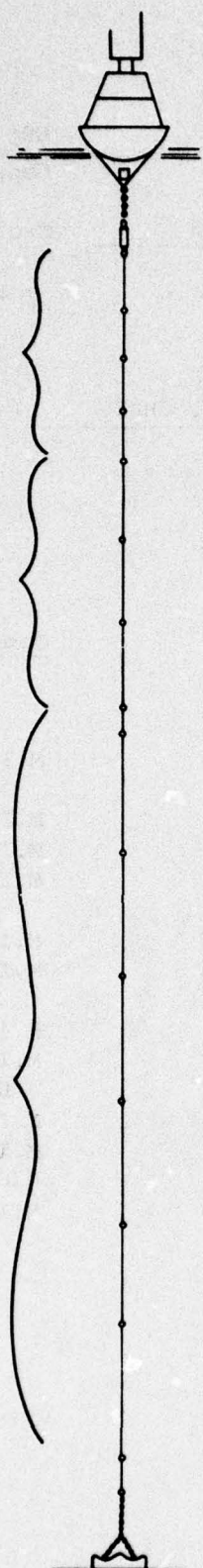
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STATION 480

3/8" 3x19 WIRE ROPE

5/16" " " "

5/8" NYLON



LIGHT
CB BEACON
HF BEACON
RADAR TRANSPONDER
NOVA TRANSPONDER
WIND RECORDER — 4801

TELEM. TENSION CELL

10 m 1/2" CHAIN

SWIVEL

100 m

100 m

100 m

100 m

500 m

500 m

500 m

22 m

515 m

502 m

529 m

512 m

480 m

589 m

20 m 3/4" NYLON

3 m 1/2" CHAIN

STIMSON ANCHOR, 5850 LBS.

Surface mooring 480 was set as a reference marker in the center of the MODE area at 28° 00'N, 69° 10'W. Its instruments included four radios, a strobe light, a tension cell and a wind recorder. Early in the morning on May 23rd the bridge personnel of the Research Vessel Chain noticed a ship hove to at the mooring position with deck lights on. As the Cahin got closer the unknown ship turned on her running lights and departed without responding to radio calls. The missing buoy is assumed to have been stolen by that ship as it was never seen again.

MODE CENTRAL SURFACE MOORING
(LOST)

Mooring No. 481

Set 1973 Mar 10
Year Month Day

27° 54.8'N
Latitude

69° 39.0'W
Longitude

Set by J. Gifford - R. Heinmiller

Ship R.V. CHAIN

Cruise 112 Leg 1

Retrieved 1973 July 04
Year Month Day

Retrieved by G. Tupper - R. Heinmiller

Ship R.V. CHAIN

Cruise 112 Leg 6

Purpose of Mooring: Mooring #1 of MODE 1 array

Mooring Type: Subsurface mooring

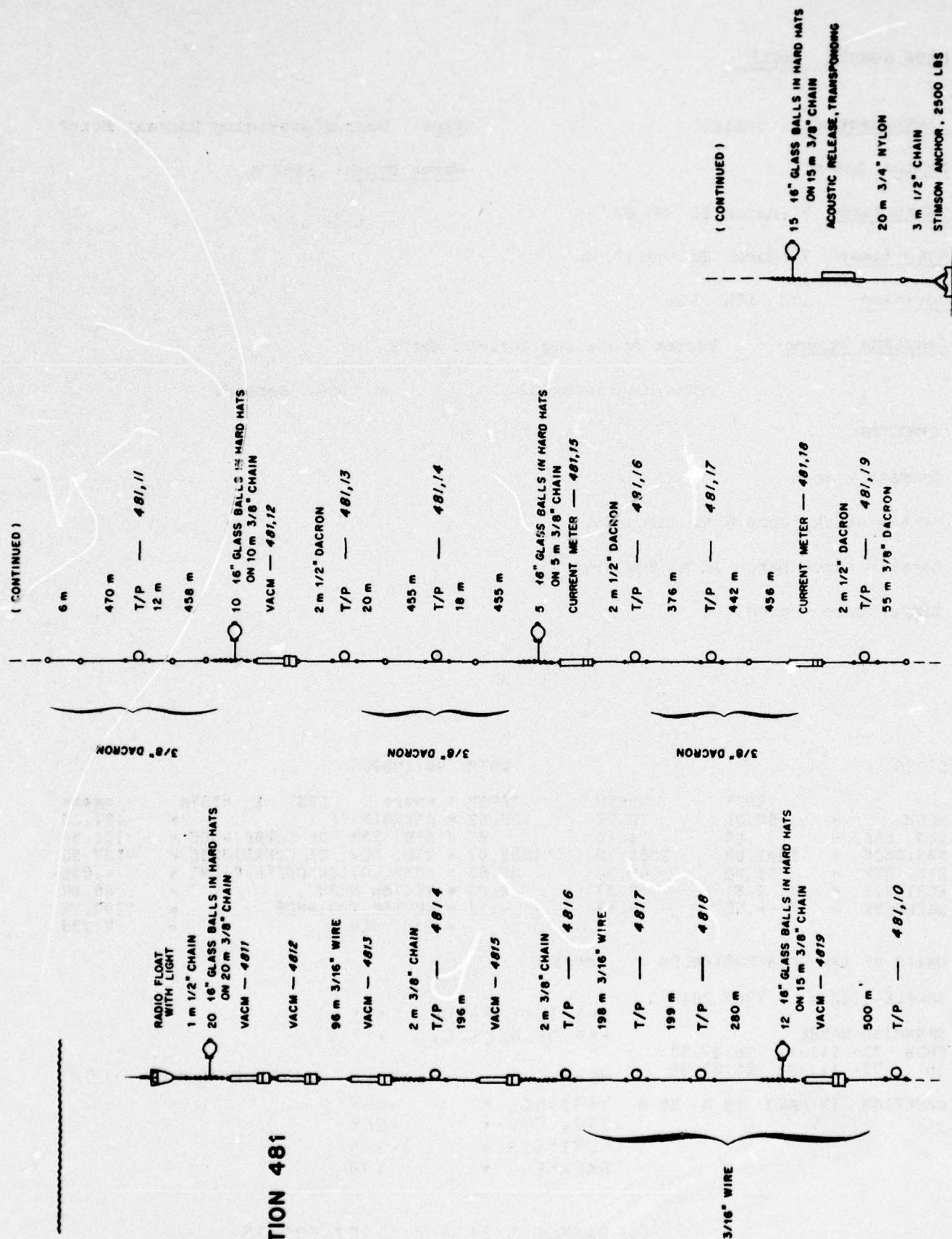
Key	Data Number	Instrument Number	Type	Depth Meters	Comments
*	4811	V-0180	VACM	389	
*	4812	V-0112	VACM	391	
+	4813	V-0110	VACM	489	
#	4814	#07	T/P	490	M.I.T.
+	4815	V-0115	VACM	691	
#	4816	#05	T/P	697	M.I.T.
#	4817	#46	T/P	897	M.I.T.
#	4818	#58	T/P	1095	M.I.T.
*	4819	V-0182	VACM	1392	
#	481,10	#01	T/P	1892	M.I.T.
#	481,11	#17	T/P	2396	M.I.T.
*	481,12	V-0119	VACM	2916	
#	481,13	#16	T/P	2919	M.I.T.
#	481,14	#03	T/P	3437	M.I.T.
*	481,15	M-218	850	3963	U.R.I.
	481,16	#02	T/P	3967	M.I.T.
#	481,17	#12	T/P	4382	M.I.T.
*	481,18	M-221	850	5343	U.R.I.
#	481,19	#04	T/P	5345	M.I.T.

Water Depth

5462

COMMENTS ON MOORING:

STATION 481



DATA NUMBER 4811

Instrument No.: V-0180

Type: Vector Averaging Current Meter

Depth: 389 m

Water Depth: 5462 m

Start time: 73-March 11 06.07.30.

Stop time: 73-March 29 00.37.36.

Duration: 17d 18h 30m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

Compass - good

Vane - sticky June 6 to recovery

Rotor - stuck March 29 to recovery

Temperature - good

STATS

DATA/ 48110900A

	EAST	NORTH	SPEED	EAST & NORTH	
MEAN	-60.31	76.77	106.82		-127.26
STD. ERR.	.89	1.10	.97		101.60
VARIANCE	1381.86	2053.70	1585.67		4187.55
STD. DEV.	36.90	45.32	39.85		64.78
KURTOSIS	2.81	2.97	2.80		96.84
SKEWNESS	-.35	-.43	-.12		1707.78
					41.33

UNITS OF RAW DATA VARIABLES = MM/SEC

SAMPLE SIZE = 1707 POINTS

SPANNING RANGE

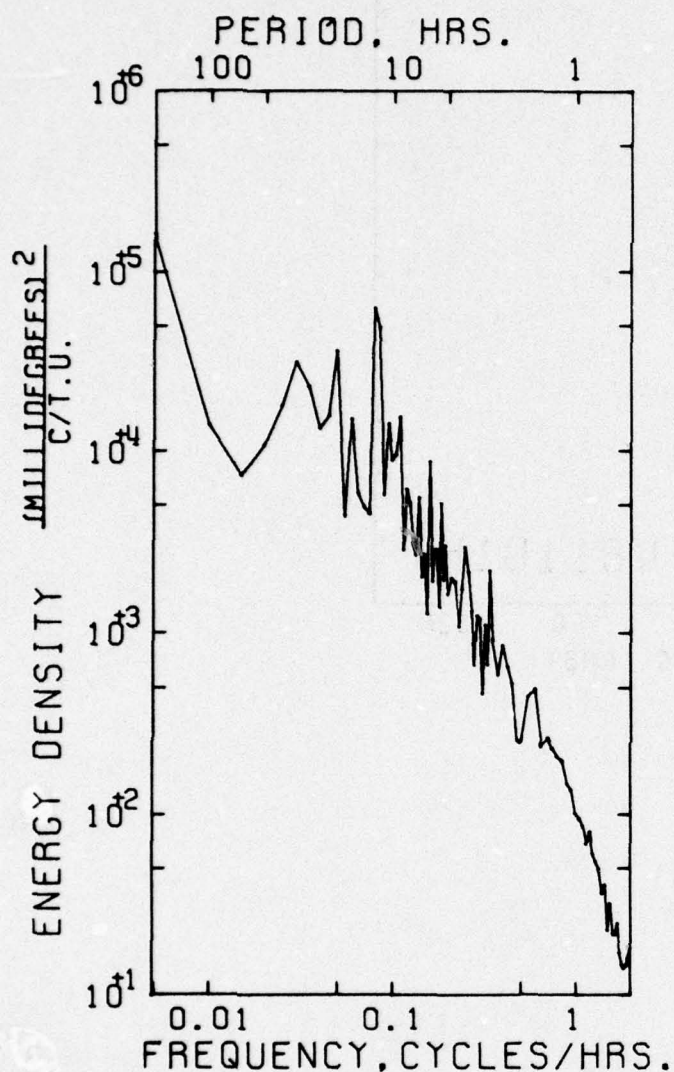
FROM 73- 111-11 06.07.30
TO 73- 111-29 00.37.30

DURATION 17 DAYS 18 H 30 M

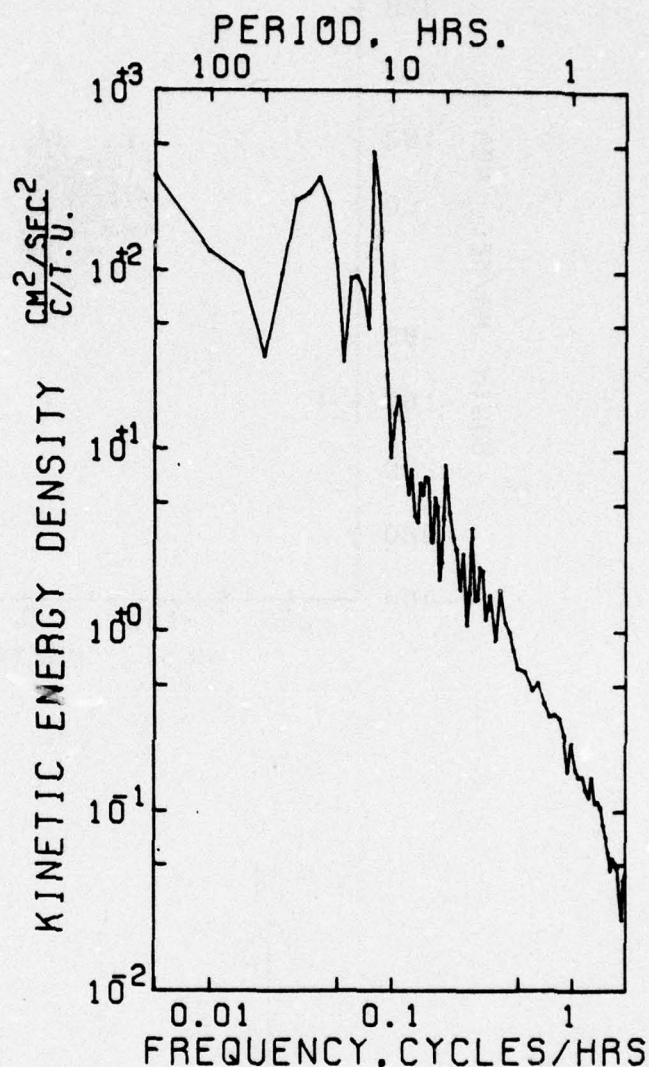
*** TEMPERATURE ***
*** DEGREES C. ***

MEAN	17.360	STD ERR	.002
VARIANCE	.004		
STD. DEV.	.065		
KURTOSIS	3.324		
SKEWNESS	.380		

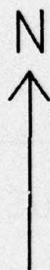
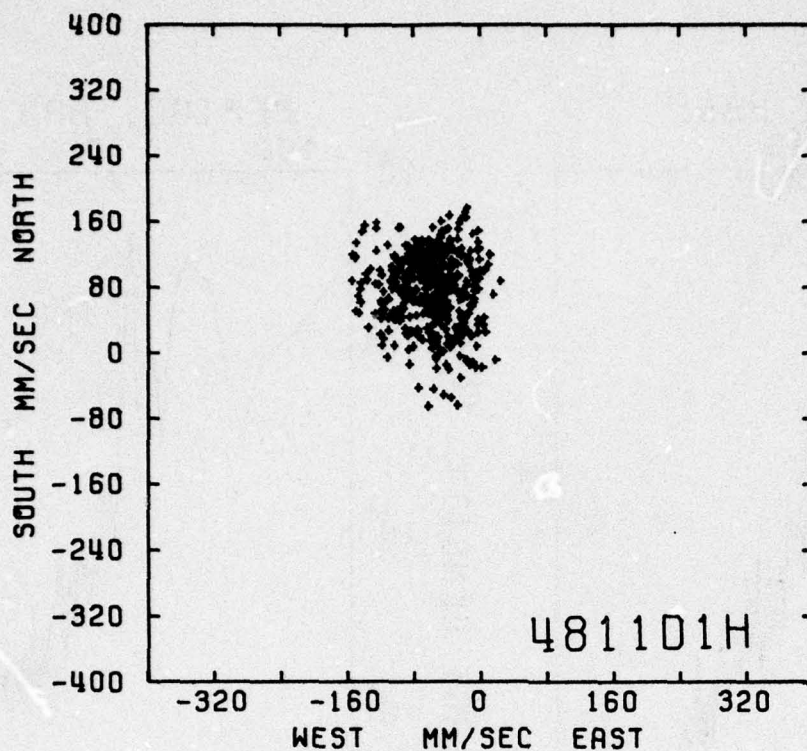
SAMPLE SIZE = 1707 POINTS



AUTO SPECTRUM
 48110900 TEMPERATURE
 389 METERS
 73-III-11 TO 73-III-28
 1 PIECES WITH 810 ESTIMATES
 PER PIECE. AVERAGED OVER
 2 ADJACENT FREQUENCY BANDS



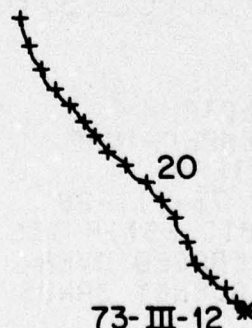
AUTO SPECTRUM
 48110900 EAST
 48110900 NORTH
 389 METERS
 73-III-11 TO 73-III-28
 1 PIECES WITH 810 ESTIMATES
 PER PIECE. AVERAGED OVER
 2 ADJACENT FREQUENCY BANDS

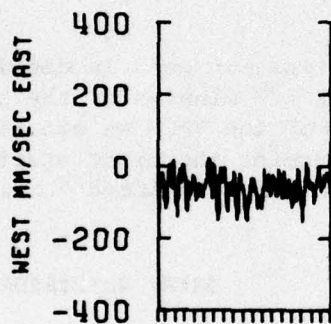
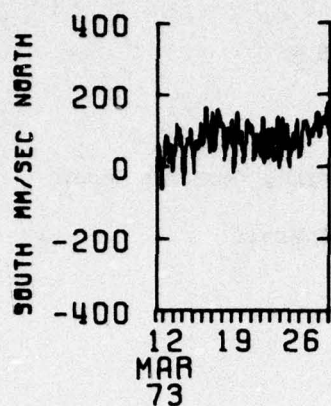
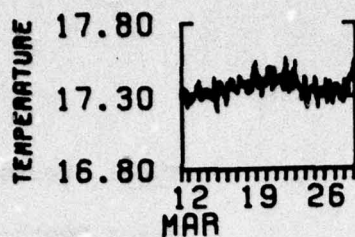


48110900

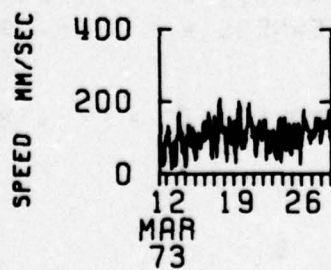
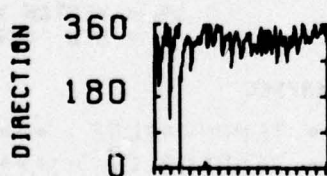
389 M

73- III-12 TO 73- III-29





4811D1H
389 M



DATA NUMBER 4812

Instrument No.: V-0112

Type: Vector Averaging Current Meter

Depth: 391 m

Water Depth: 5462 m

Start time: 73-March-11 07.11.15.

Stop time: 73-April-23 20.56.15.

Duration: 43d 13h 45m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

Compass - good

Vane stuck May 20 to end

Rotor below threshold April 23 & 24 and May 8 to June 16

Temperature good

Clock had problem in counting so was not used in decoding. Last events show that the decoded data is within 7 1/2 minutes of the correct time. Because of the recording characteristics of the VACM we can not position events within the 15 minute interval to determine the exact start time of the record. The clock check indicates that the clock drifted 1 minute 13 seconds from February 20 to July 17, 1973.

STATS

DATA/ 48120900A

	EAST	NORTH	SPEED	EAST & NORTH	
MEAN	-42.12	67.18	86.97	COVARIANCE	-64.21
STD. ERR.	.78	.78	.70	STD. ERR. OF COVARIANCE	70.20
VARIANCE	2548.90	2634.61	2087.40	STD. DEV. OF COVARIANCE	4540.80
STD. DEV.	50.49	51.33	45.47	CORRELATION COEFFICIENT	-.025
KURTOSIS	3.17	3.72	3.01	VECTOR MEAN	79.28
SKEWNESS	.12	.29	.45	VECTOR VARIANCE	2591.76
				STD. DEV.	50.91

UNITS OF RAW DATA VARIABLES = MM/SEC

SAMPLE SIZE = 4184 POINTS *** TEMPERATURE ***
*** DEGREES C. ***

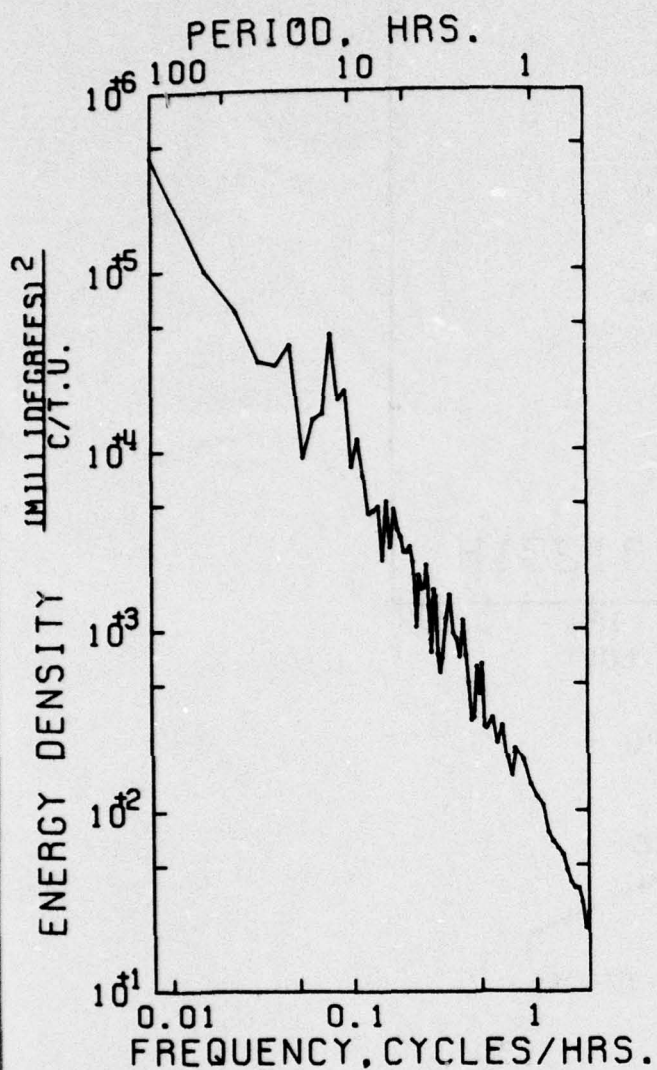
SPANNING RANGE

FROM 73- III-11 07.11.15
TO 73- IV -23 20.56.15

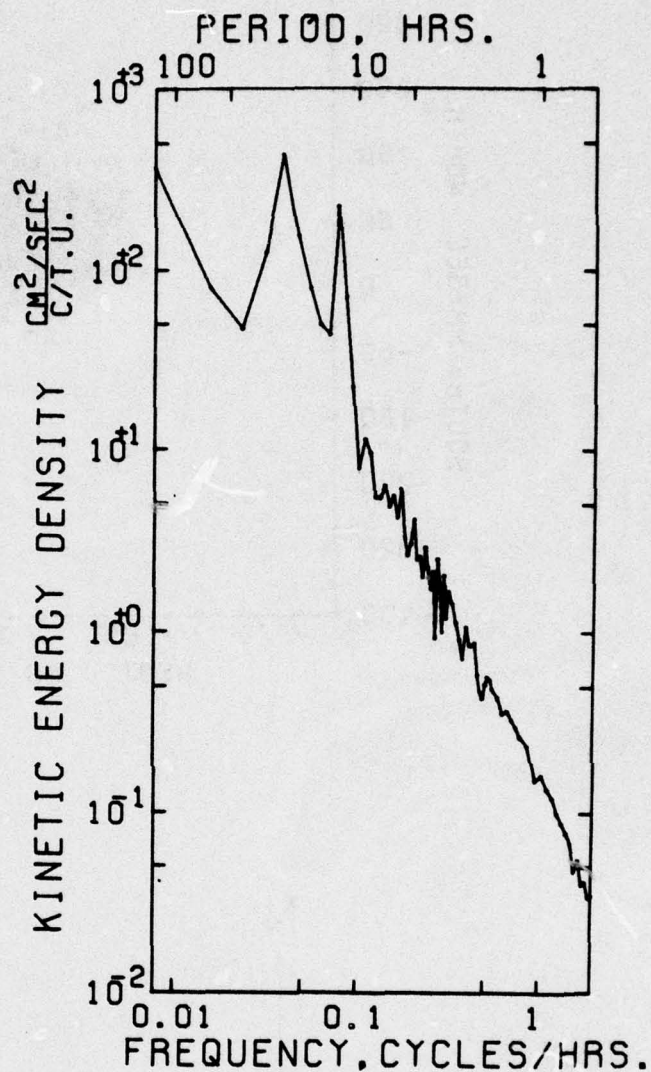
DURATION 43 DAYS 13 H 45 M

MEAN	=	17.566	STD ERR	=	.003
VARIANCE	=	.047			
STD. DEV.	=	.216			
KURTOSIS	=	1.483			
SKEWNESS	=	-.093			

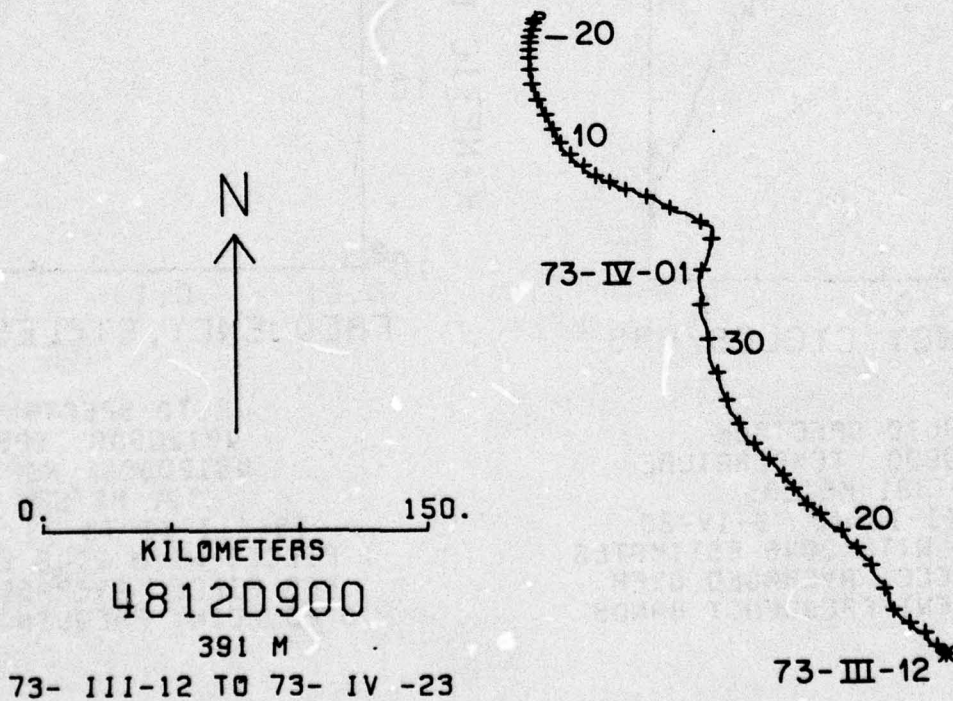
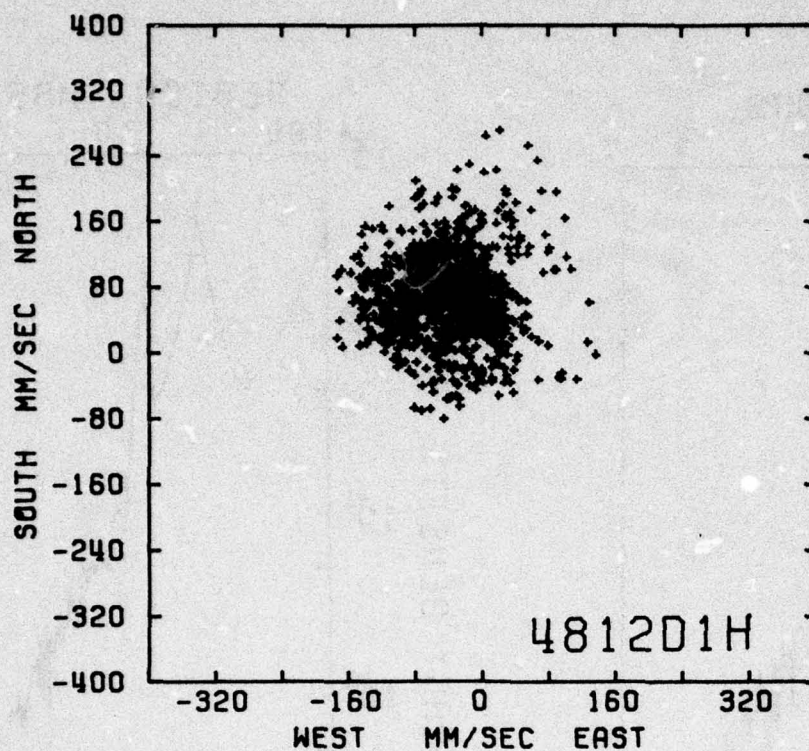
SAMPLE SIZE = 4184 POINTS

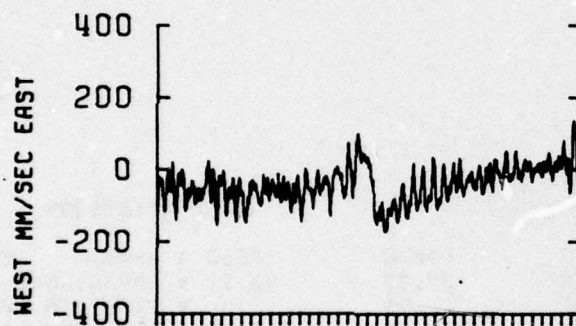
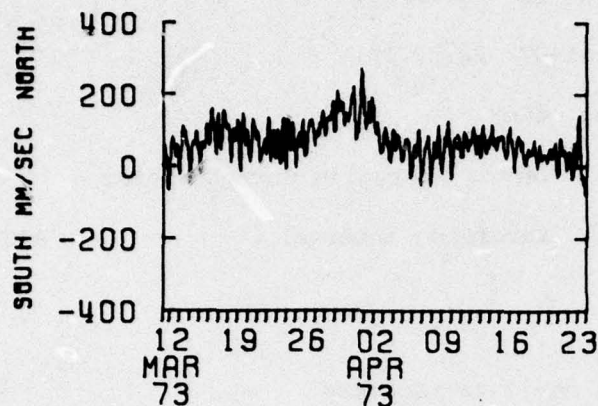
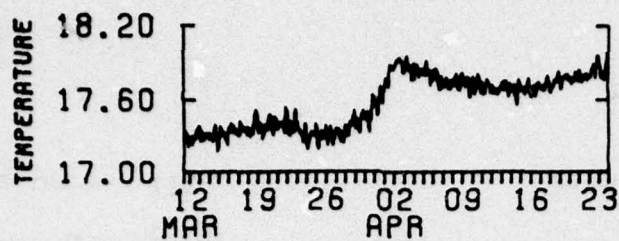


AUTO SPECTRUM
48120900 TEMPERATURE
391 METERS
73-III-12 TO 73-IV-23
1 PIECES WITH 2048 ESTIMATES
PER PIECE. AVERAGED OVER
8 ADJACENT FREQUENCY BANDS



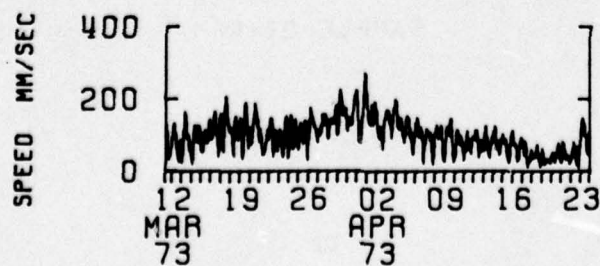
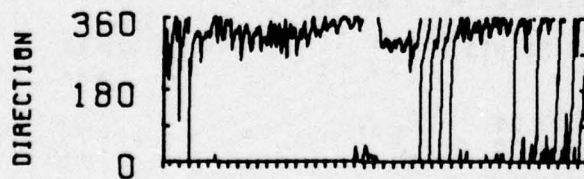
AUTO SPECTRUM
48120900 EAST
48120900 NORTH
391 METERS
73-III-11 TO 73-IV-22
1 PIECES WITH 2048 ESTIMATES
PER PIECE. AVERAGED OVER
8 ADJACENT FREQUENCY BANDS





481201H

391 M



DATA NUMBER 4819

Instrument No.: V-0182

Type: Vector Averaging Current Meter

Depth: 1392 m

Water Depth: 5462 m

Start time: 73-March-11 14.07.30.

Stop time: 73-April-07 22.52.30.

Duration: 27d 8h 45m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

Compass - good

Vane - sticky from May 3 to recovery

Rotor - below threshold or highly suspect April 8 to May 4

Temperature - good

STATS

DATA/ 48198900A

	EAST	NORTH	SPEED	EAST & NORTH	
MEAN	-27.58	28.39	58.11		
STD. ERR.	.61	.73	.48		
VARIANCE	964.12	1386.58	588.10		
STD. DEV.	31.05	37.24	24.46		
KURTOSIS	2.68	2.47	3.50		
SKEWNESS	-.04	-.26	.85		
				COVARIANCE	-91.88
				STD. ERR. OF COVARIANCE	35.13
				STD. DEV. OF COVARIANCE	1800.66
				CORRELATION COEFFICIENT	-.080
				VECTOR MEAN	40.31
				VECTOR VARIANCE	1175.95
				STD. DEV.	34.28

UNITS OF RAW DATA VARIABLES = MM/SEC

SAMPLE SIZE = 2628 POINTS *** TEMPERATURE ***
*** DEGREES C. ***

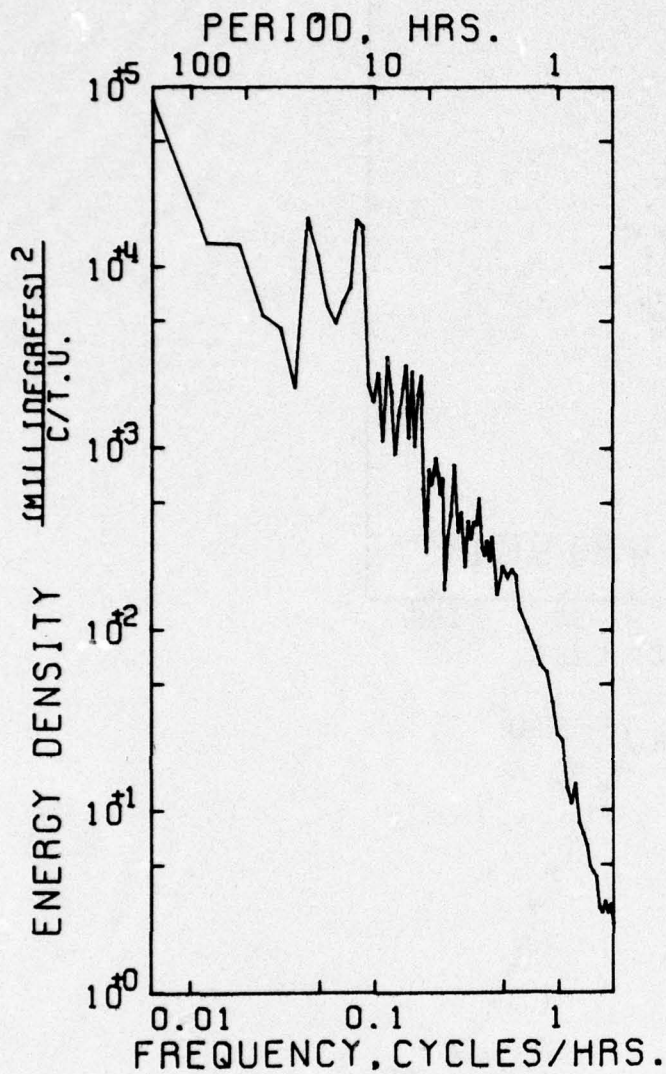
SPANNING RANGE

FROM 73- III-11 14.07.30
TO 73- IV -07 22.52.30

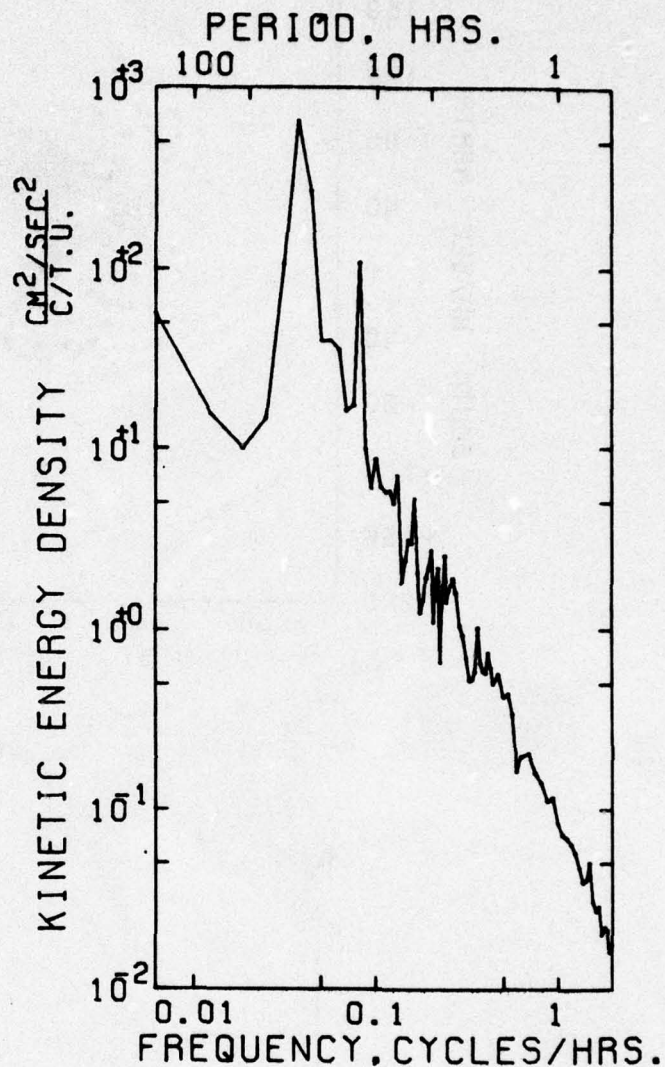
DURATION 27 DAYS 8 H 45 M

MEAN	=	4.576	STD ERR	=	.001
VARIANCE	=	.002			
STD. DEV.	=	.040			
KURTOSIS	=	2.717			
SKEWNESS	=	-.003			

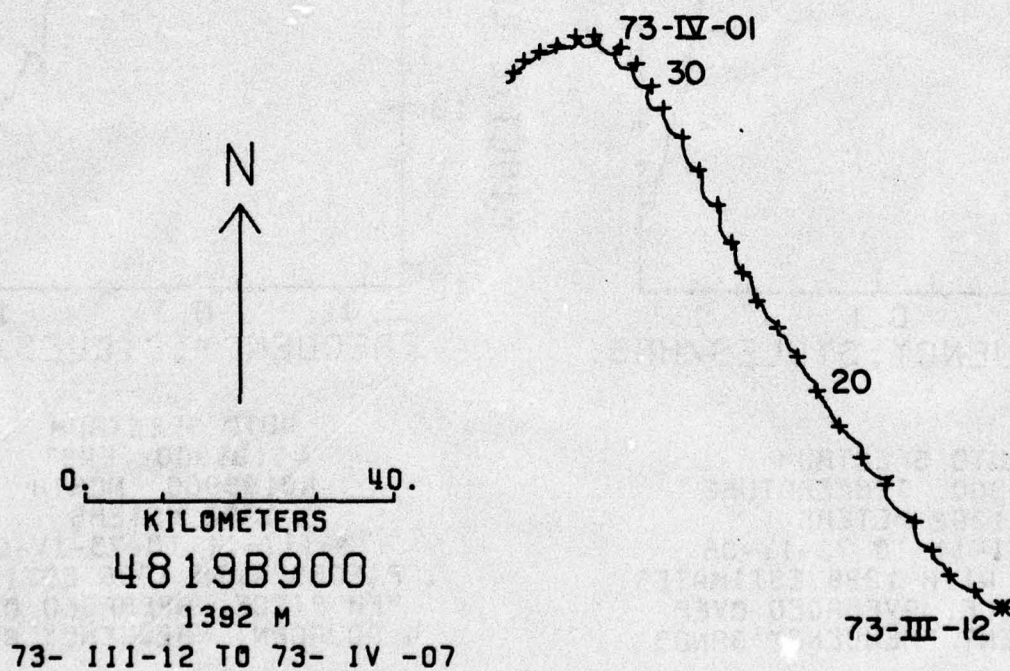
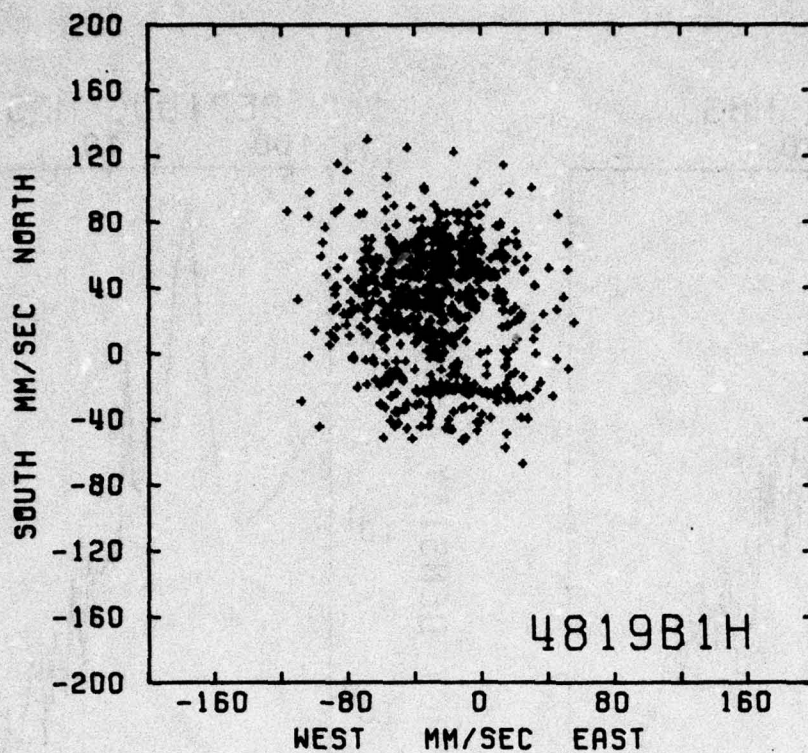
SAMPLE SIZE = 2628 POINTS

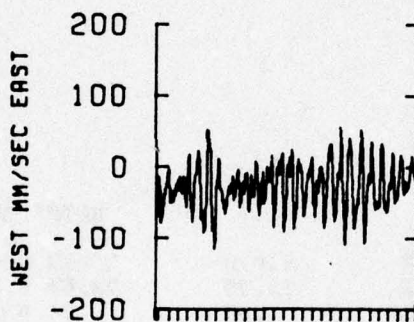
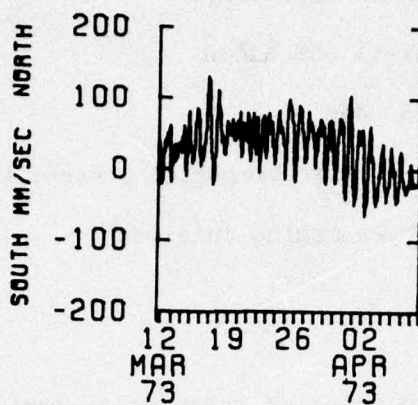
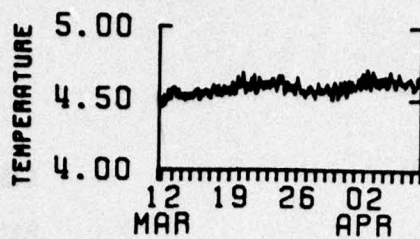


AUTO SPECTRUM
 48198900 TEMPERATURE
 1392 METERS
 73-III-11 TO 73-IV-06
 1 PIECES WITH 1296 ESTIMATES
 PER PIECE. AVERAGED OVER
 4 ADJACENT FREQUENCY BANDS

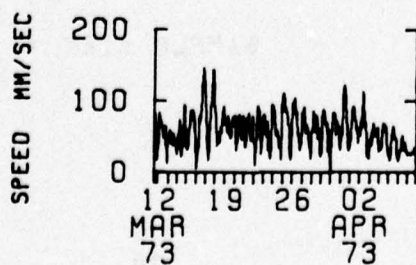


AUTO SPECTRUM
 48198900 EAST
 48198900 NORTH
 1392 METERS
 73-III-11 TO 73-IV-07
 1 PIECES WITH 1296 ESTIMATES
 PER PIECE. AVERAGED OVER
 4 ADJACENT FREQUENCY BANDS





4819B1H
1392 M



DATA NUMBER 481,12

Instrument No.: V-0119

Type: Vector Averaging Current Meter

Depth: 2916 m

Water Depth: 5462 m

Start time: 73-March-11 11.07.30.

Stop time: 73-April-11 08.52.30.

Duration: 30d 21h 45m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

Compass - good

Vane - progressively stickier March 31 to April 15, stuck April 29 to June 9

Rotor - looks good but the last events did not show up in the deck data

Temperature - good

STATS

DATA/ 481.128800R

	EAST	NORTH	SPEED	EAST & NORTH	
MEAN	-29.55	26.79	49.88		47.11
STD. ERR.	.32	.64	.32		19.43
VARIANCE	908.30	1208.97	298.60		1050.48
STD. DEV.	17.50	34.73	17.22		.078
KURTOSIS	2.71	2.18	2.18		95.87
SKEWNESS	-.08	-.54	.21		758.94
					27.50

UNITS OF RAW DATA VARIABLES = MM/SEC

SAMPLE SIZE = 2968 POINTS *** TEMPERATURE ***
*** DEGREES C. ***

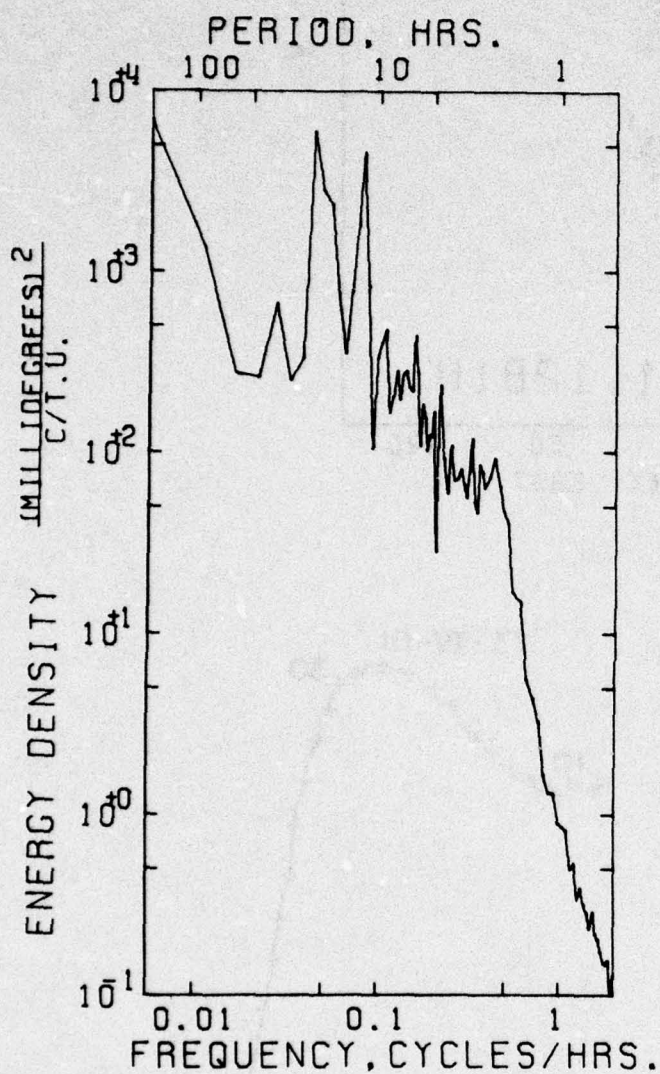
SPANNING RANGE

FROM 73- III-11 11.07.30
TO 73- IV -11 08.52.30

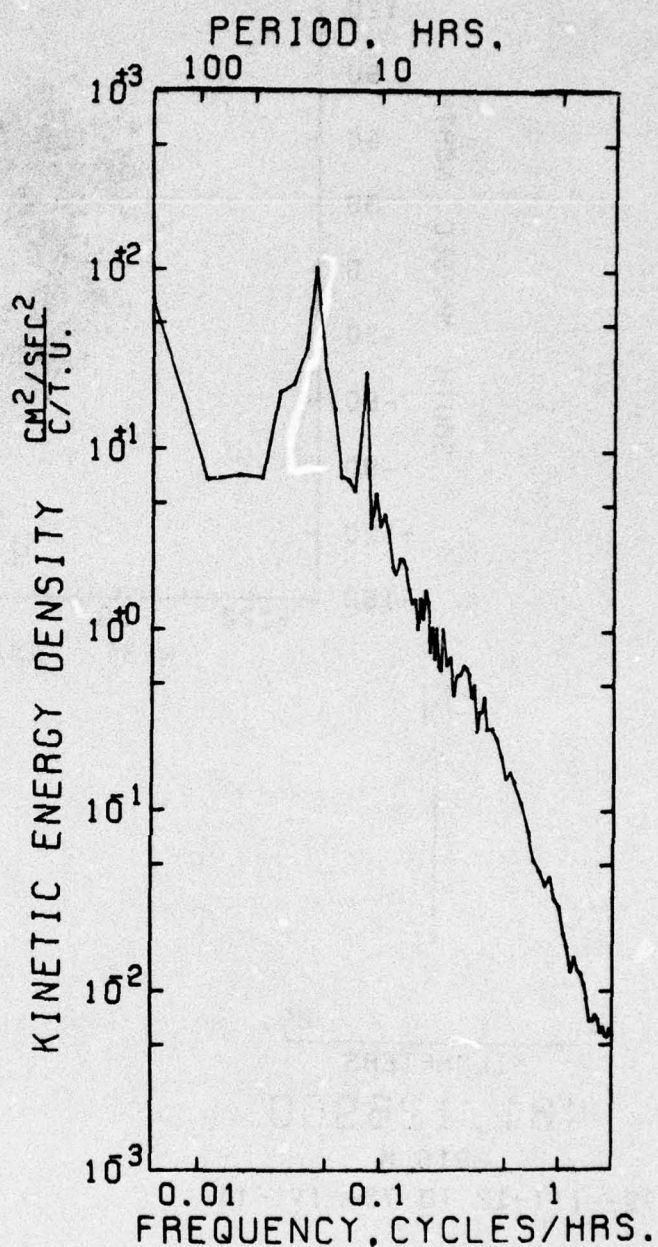
DURATION 30 DAYS 21 H 45 M

MEAN	2.758	STD ERR	.000
VARIANCE	.000		
STD. DEV.	.019		
KURTOSIS	2.751		
SKEWNESS	.329		

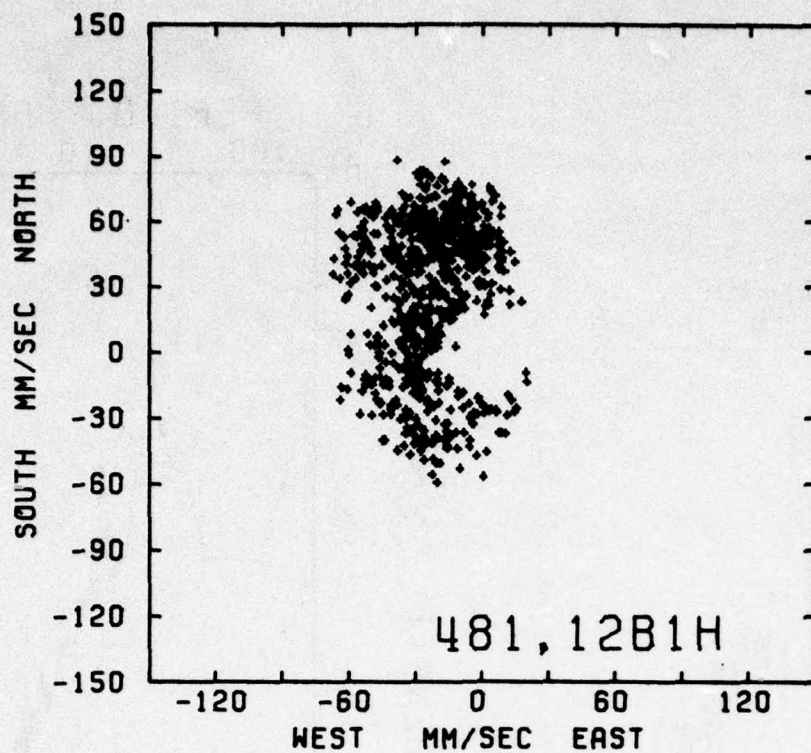
SAMPLE SIZE = 2968 POINTS



AUTO SPECTRUM
 481.128900 TEMPERATURE
 2916 METERS
 73-III-11 TO 73-IV-10
 1 PIECES WITH 1458 ESTIMATES
 PER PIECE. AVERAGED OVER
 4 ADJACENT FREQUENCY BANDS



AUTO SPECTRUM
 481.128900 EAST
 481.128900 NORTH
 2916 METERS
 73-III-11 TO 73-IV-10
 1 PIECES WITH 1458 ESTIMATES
 PER PIECE. AVERAGED OVER
 4 ADJACENT FREQUENCY BANDS

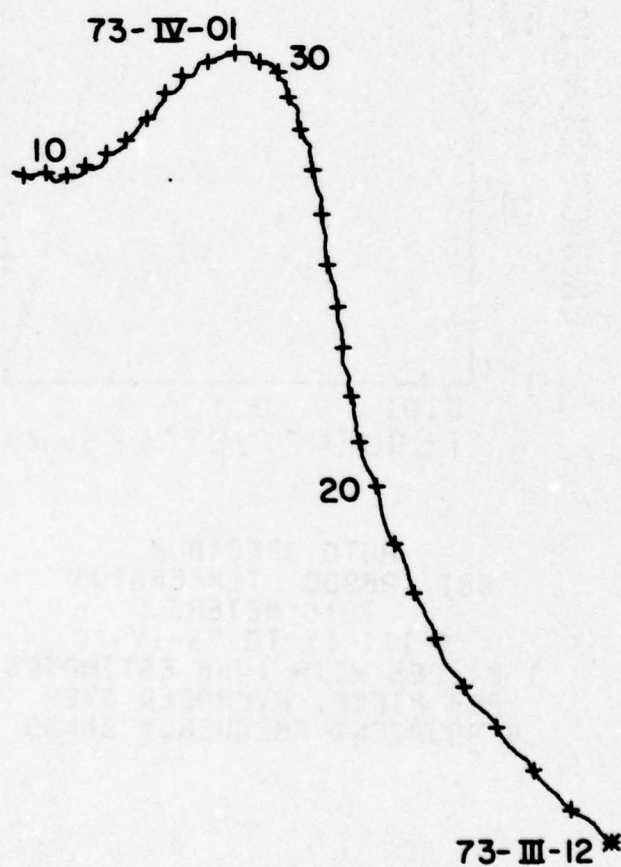


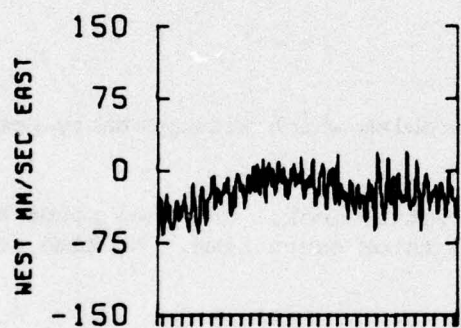
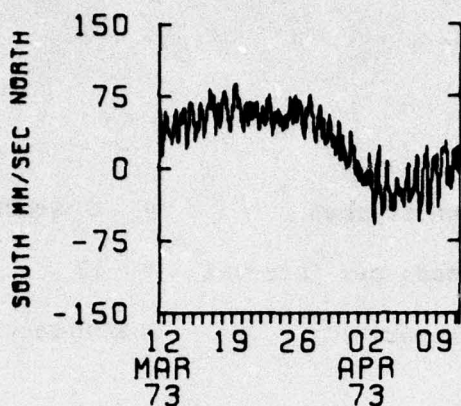
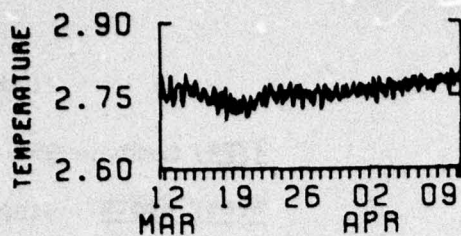
0. 30.
KILOMETERS

481,12B900

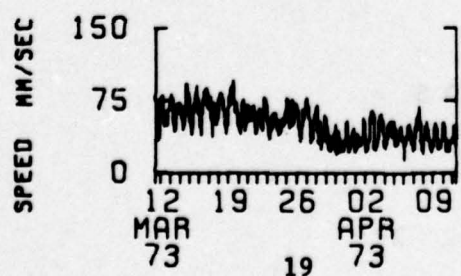
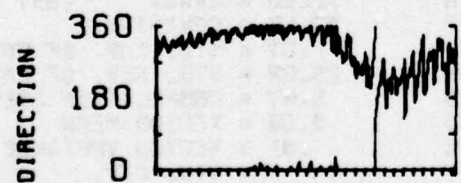
2916 M

73- III-12 TO 73- IV -11





481.12B1H
2916 M



DATA NUMBER 481,15

Data number 481.15

Instrument No.: M-218

Type: Geodyne 850 current meter

Depth: 3963 m

Water depth: 5462 m

Start time: 73-March-11 05.19.42.

Stop time: 73-July-04 09.49.42.

Duration: 115d 4h 30m

Sampling scheme: Interval

time between strobes = 5 seconds

no. of strobes per interval = 13

recording interval = 1800 seconds

COMMENTS:

Instrument owned by the University of Rhode Island

Compass - good

Vane - good

Rotor count - minor order bit problem which will probably not affect the vector averages

Clock - mechanical clock not crystal clock. Computed rotor event time occurs 1 1/2 hours sooner than the real rotor event time. No time adjustment made.

STATS

DATA/ 481.1501800R

MEAN	=	EAST	NORTH	SPEED	=	*****	EAST & NORTH	*****
STD. ERR.	=	2.43	3.27	25.45	=	COVARIANCE	=	82.55
VARIANCE	=	.23	.26	.07	=	STD. ERR. OF COVARIANCE	=	3.69
STD. DEV.	=	201.36	378.56	28.00	=	STD. DEV. OF COVARIANCE	=	274.48
KURTOSIS	=	16.77	19.48	5.47	=	CORRELATION COEFFICIENT	=	.253
SKEWNESS	=	1.61	1.63	3.05	=	VECTOR MEAN	=	4.07
	=	-.06	-.14	.61	=	VECTOR VARIANCE	=	930.46
					=	STD. DEV.	=	10.10

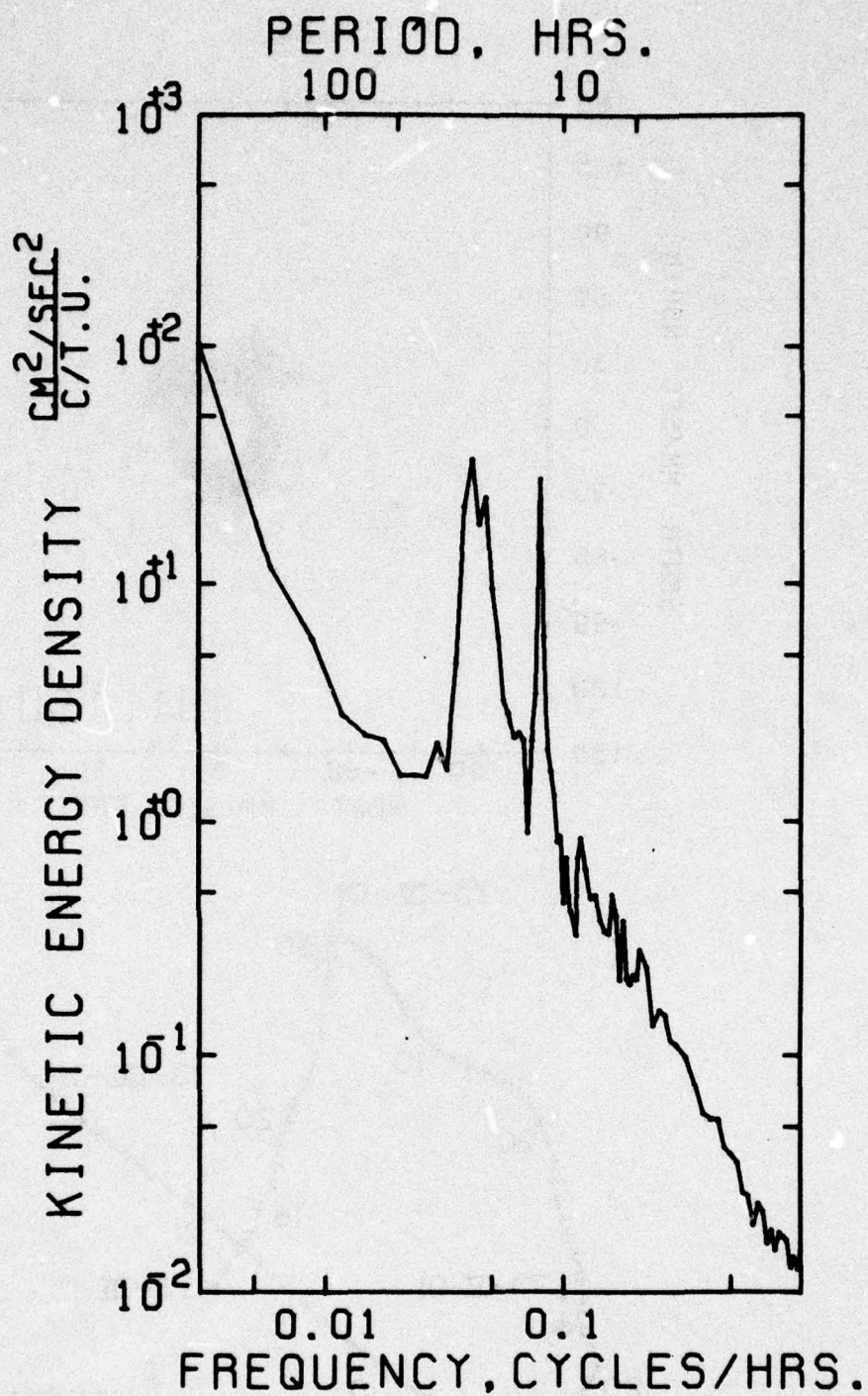
UNITS OF RAW DATA VARIABLES = MM/SEC

SAMPLE SIZE = 5530 POINTS

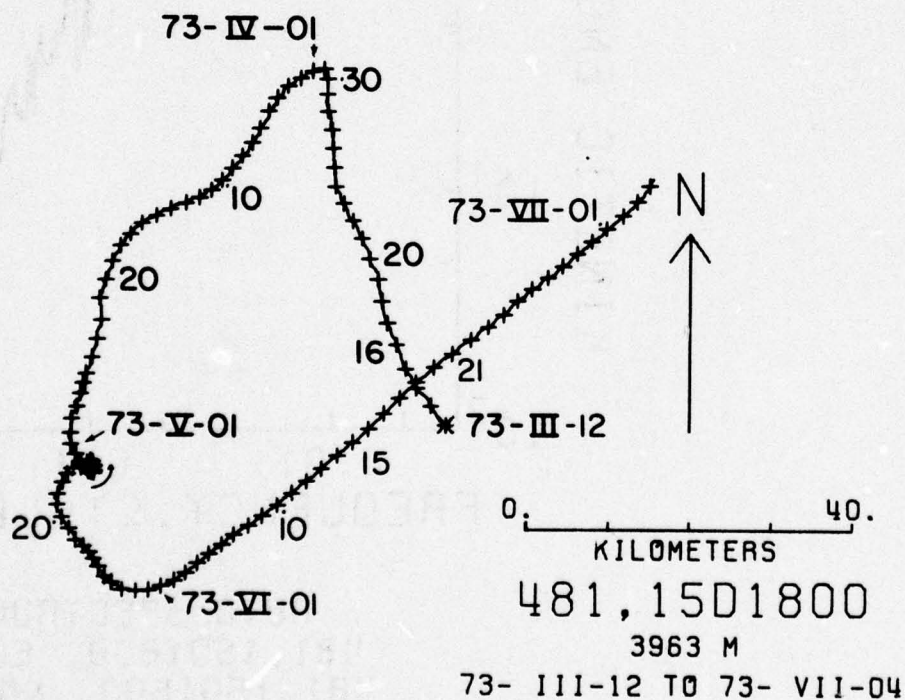
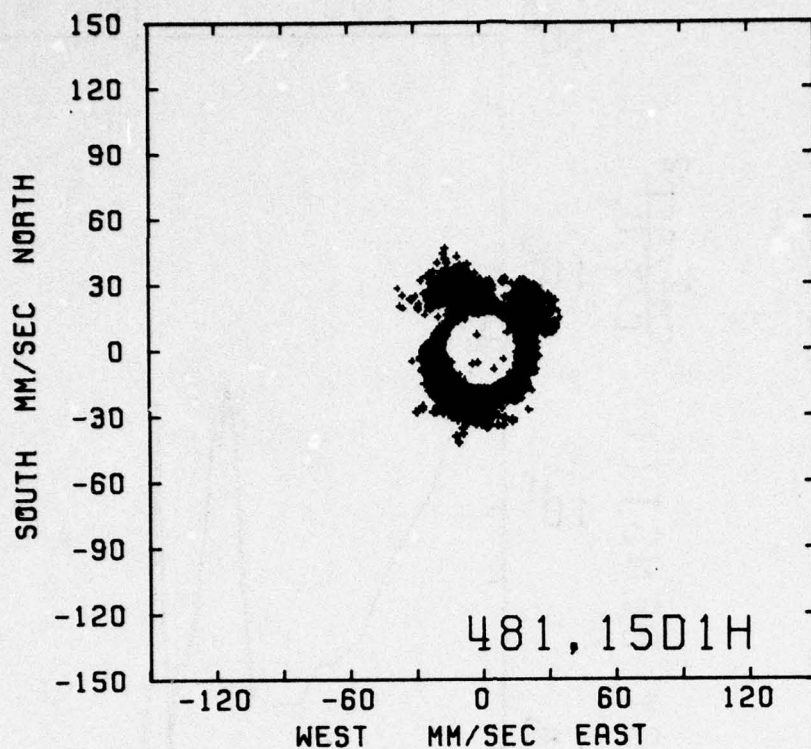
SPANNING RANGE

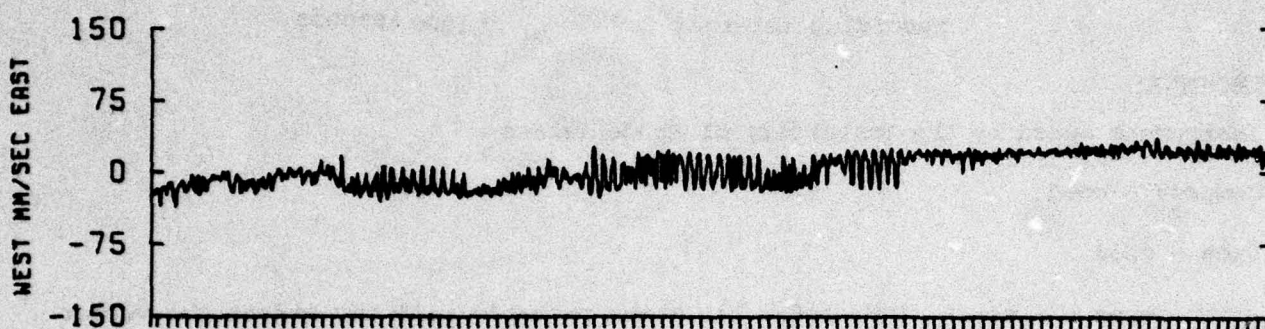
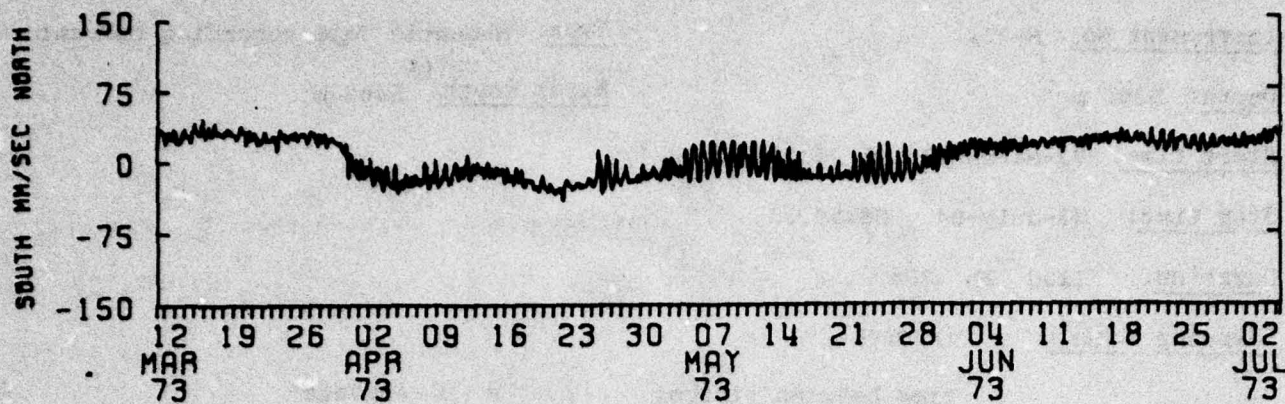
FROM 73- III-11 05.18.42
TO 73- VII-04 09.49.42

DURATION 115 DAYS 4 H 30 M 0 S

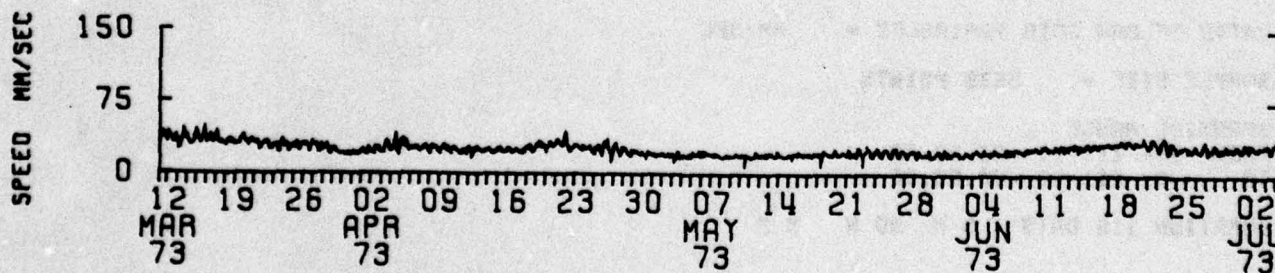
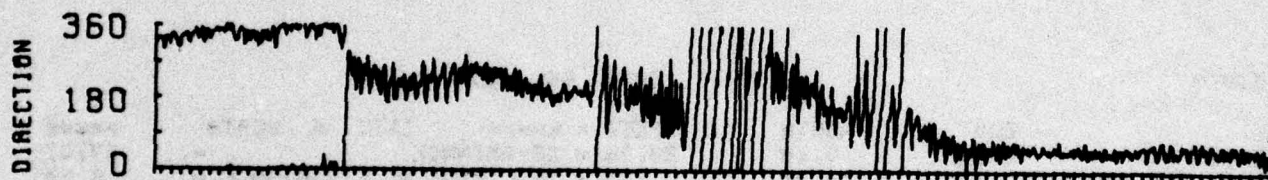


AUTO SPECTRUM
481.1501800 EAST
481.1501800 NORTH
3963 METERS
73-III-11 TO 73-VII-01
1 PIECES WITH 2700 ESTIMATES
PER PIECE. AVERAGED OVER
8 ADJACENT FREQUENCY BANDS





481,15D1H
3963 M



DATA NUMBER 481,18

Instrument No.: M-221

Type: Magnetic Tape Recording Current
Meter

Depth: 5356 m

Water depth: 5462 m

Start time: 73-March-11 05.20.32.

Stop time: 73-July-04 08.50.32.

Duration: 115d 3h 30m

Sampling scheme: Interval

time between strobes = 5 seconds

no. of strobes per interval = 13

recording interval = 1800 seconds

COMMENTS:

Instrument owned by the University of Rhode Island

Compass - good

Vane - good

Rotor count - a stuck low order bit which probably will not affect the vector averages

Clock - mechanical clock not crystal clock. Computed rotor event time occurs 2 hours sooner than the real rotor event time. No time adjustment made.

STATS

DATA/ 481.1801800A

MEAN	=	EAST	NORTH	SPEED	=	*****	EAST & NORTH	*****
STD. ERR.	=	5.30	9.19	29.75	=	COVARIANCE	=	67.07
VARIANCE	=	.25	.91	.13	=	STD. ERR. OF COVARIANCE	=	5.54
STD. DEV.	=	345.16	518.47	80.89	=	STD. DEV. OF COVARIANCE	=	412.21
KURTOSIS	=	18.58	22.77	9.54	=	CORRELATION COEFFICIENT	=	.158
SKEWNESS	=	2.15	2.09	8.81	=	VECTOR MEAN	=	10.80
	=	-.14	-.09	1.29	=	VECTOR VARIANCE	=	431.82
					=	STD. DEV.	=	20.78

UNITS OF RAW DATA VARIABLES = MM/SEC

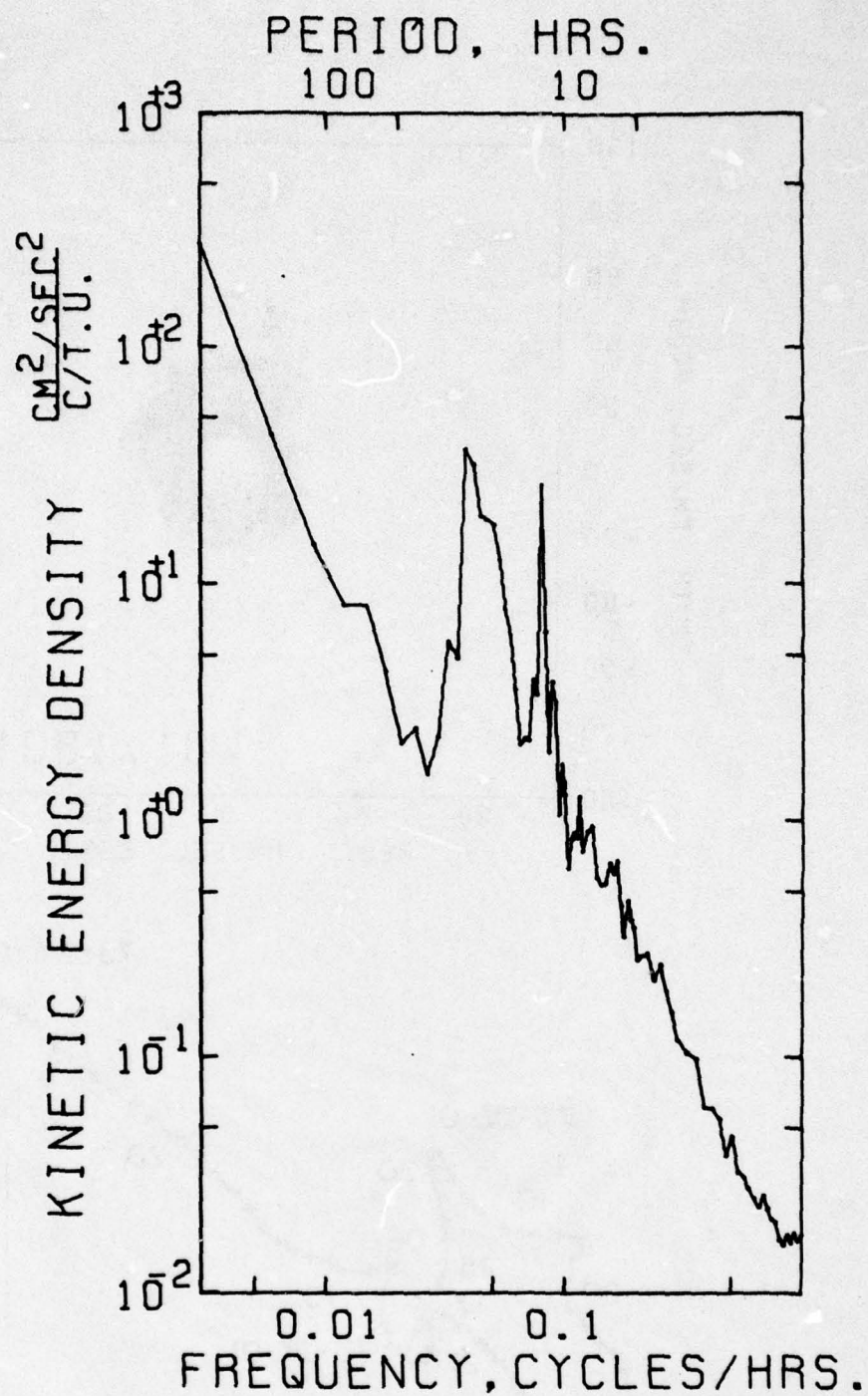
SAMPLE SIZE = 5628 POINTS

SPANNING RANGE

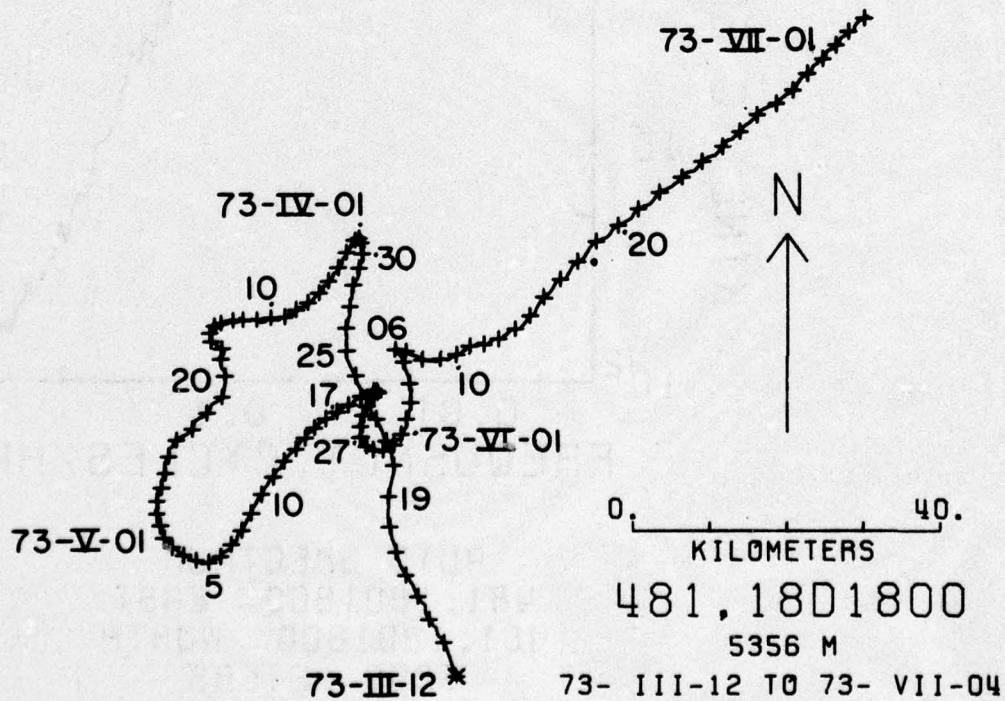
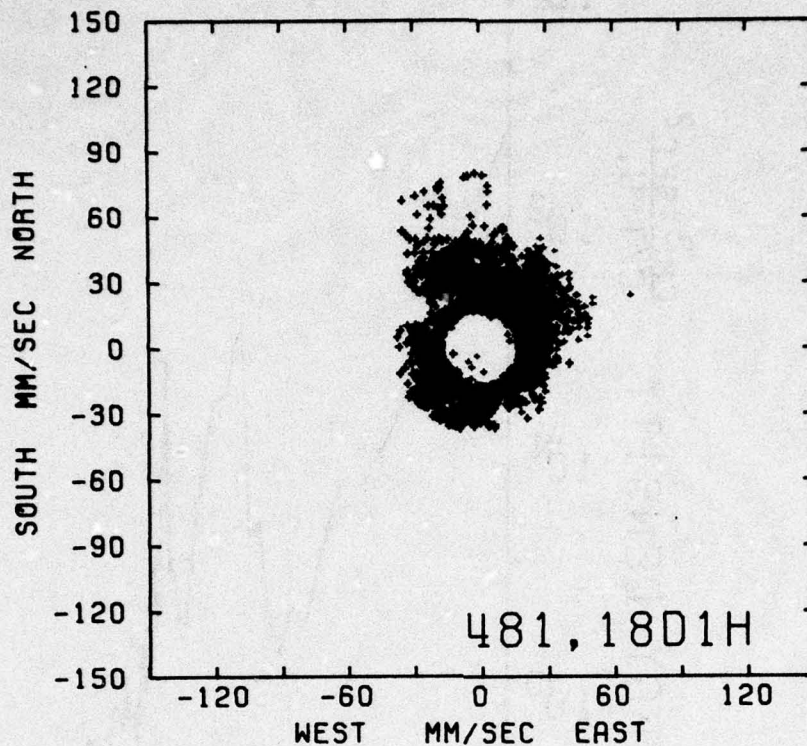
FROM 73- III-11 05.20.32

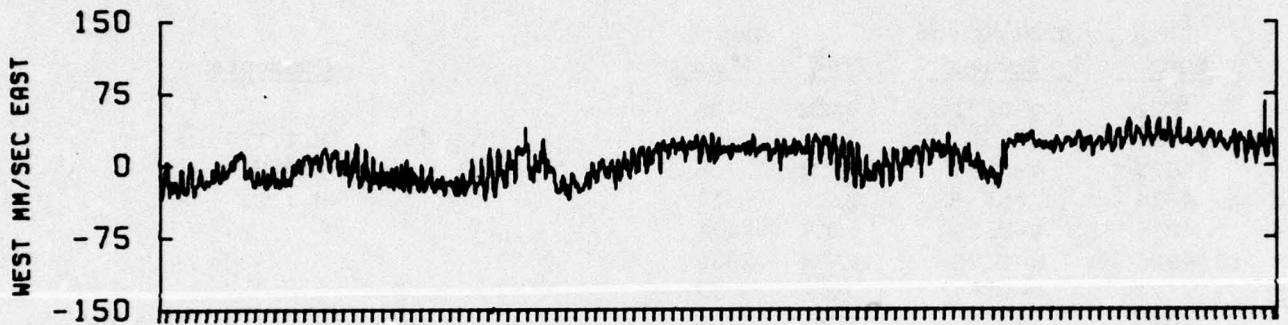
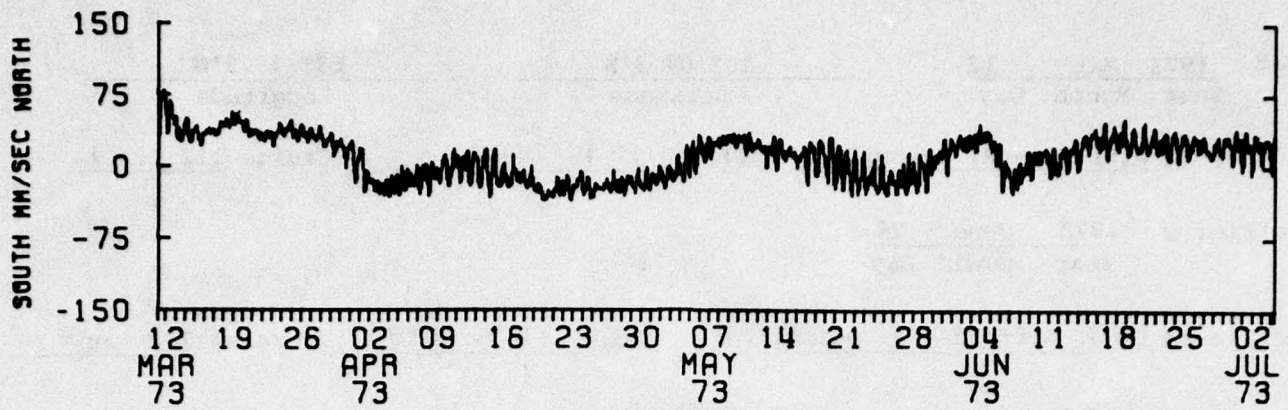
TO 73- VII-04 08.50.32

DURATION 115 DAYS 3 H 30 M 0 S

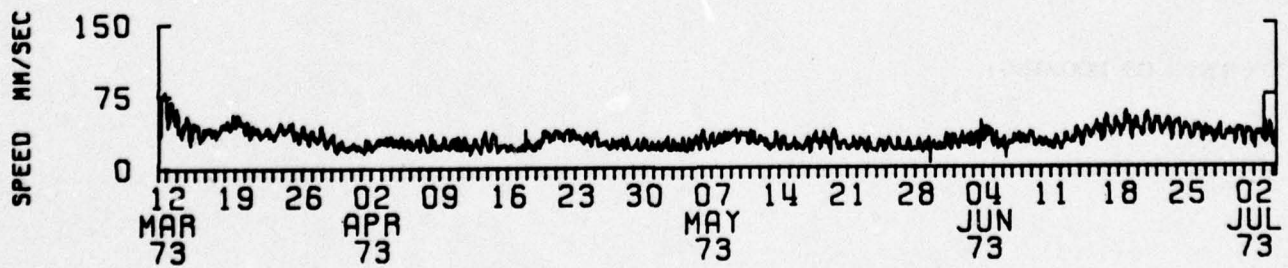
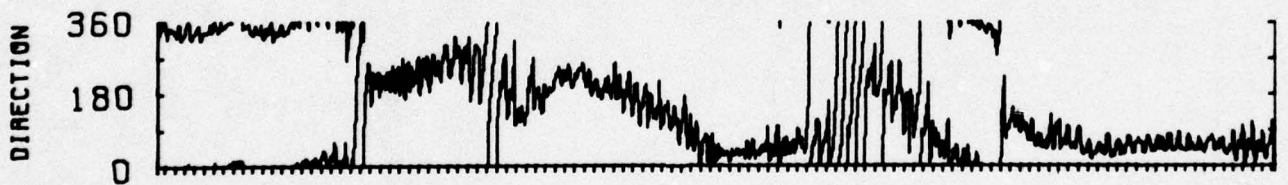


AUTO SPECTRUM
 481.1801800 EAST
 481.1801800 NORTH
 5356 METERS
 73-III-11 TO 73-VII-01
 1 PIECES WITH 2700 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS





481.1801H
5356 M



Mooring No. 482

Set 1973 Mar 12 28° 09.3'N 68° 39.3'W
Year Month Day Latitude Longitude

Set by J. Gifford - R. Heinmiller Ship R.V. CHAIN Cruise 112 Leg 1

Retrieved 1973 June 26
Year Month Day

Retrieved by J. Gifford - R. Heinmiller Ship R.V. CHAIN Cruise 112 Leg 6

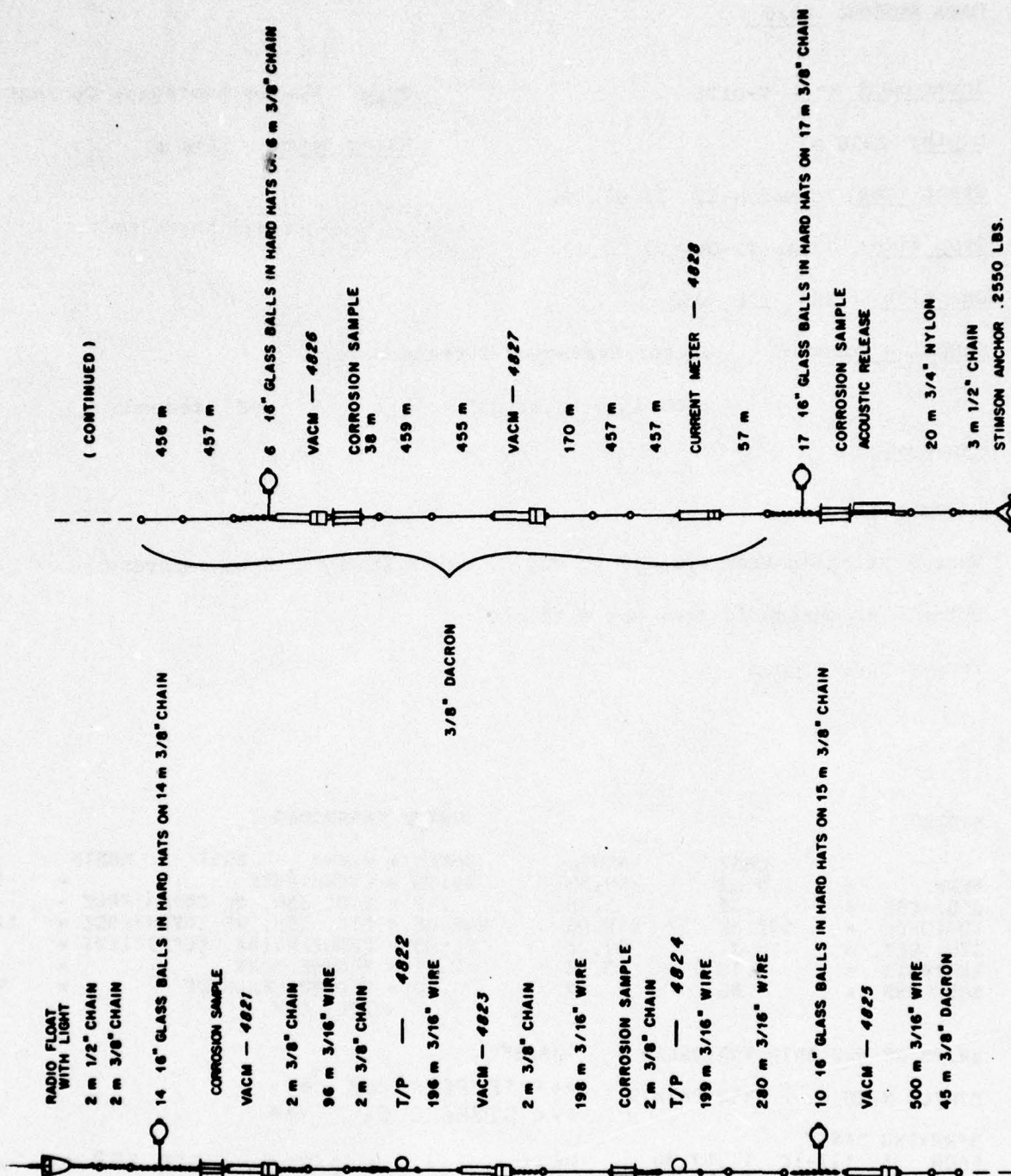
Purpose of Mooring: Mooring #8 of MODE 1 array

Mooring Type: Subsurface mooring

<u>Key</u>	<u>Data Number</u>	<u>Instrument Number</u>	<u>Type</u>	<u>Depth Meters</u>	<u>Comments</u>
+	4821	V-0121	VACM	406	
#	4822	#15	T/P	507	M.I.T.
+	4823	V-0130	VACM	706	I.O.S.
#	4824	#54	T/P	911	M.I.T.
+	4825	V-0135	VACM	1411	
*	4826	V-0126	VACM	2936	
*	4827	V-0165	VACM	3957	
	4828	H-275	FCM	5128	
					Nova University, Florida
	Water depth			5239	

COMMENTS ON MOORING:

STATION 482



DATA NUMBER 4826

Instrument No.: V-0126

Type: Vector Averaging Current Meter

Depth: 2936 m

Water Depth: 5239 m

Start time: 73-March-12 11.07.30.

Stop time: 73-April-06 23.52.30,

Duration: 25d 12h 45m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

Compass - good

Vane - sticking from April 7 to May 8, stuck from May 8 to recovery

Rotor - at threshold from May 8 to end

Temperature - good

STATS

DATA/ 48268900A

	EAST	NORTH	SPEED	EAST & NORTH	
MEAN	6.42	-44.89	50.00		-139.40
STD. ERR.	.39	.46	.42		22.28
VARIANCE	972.82	518.00	442.05		1102.45
STD. DEV.	19.91	22.76	21.09		-917
KURTOSIS	9.78	9.15	2.71		45.28
SKEWNESS	.85	.07	.80		445.48
					21.11

UNITS OF RAW DATA VARIABLES = MM/SEC

SAMPLE SIZE = 2452 POINTS *** TEMPERATURE ***
*** DEGREES C. ***

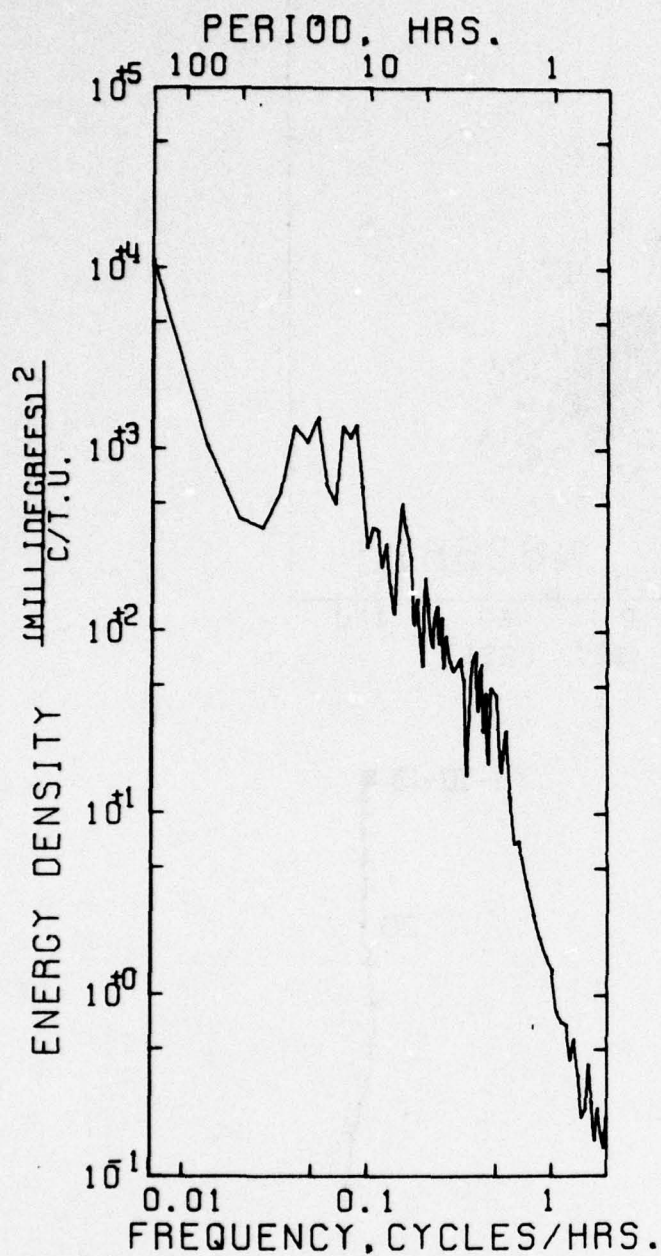
SPANNING RANGE

FROM 73- III-12 11.07.30
TO 73- IV -06 23.52.30

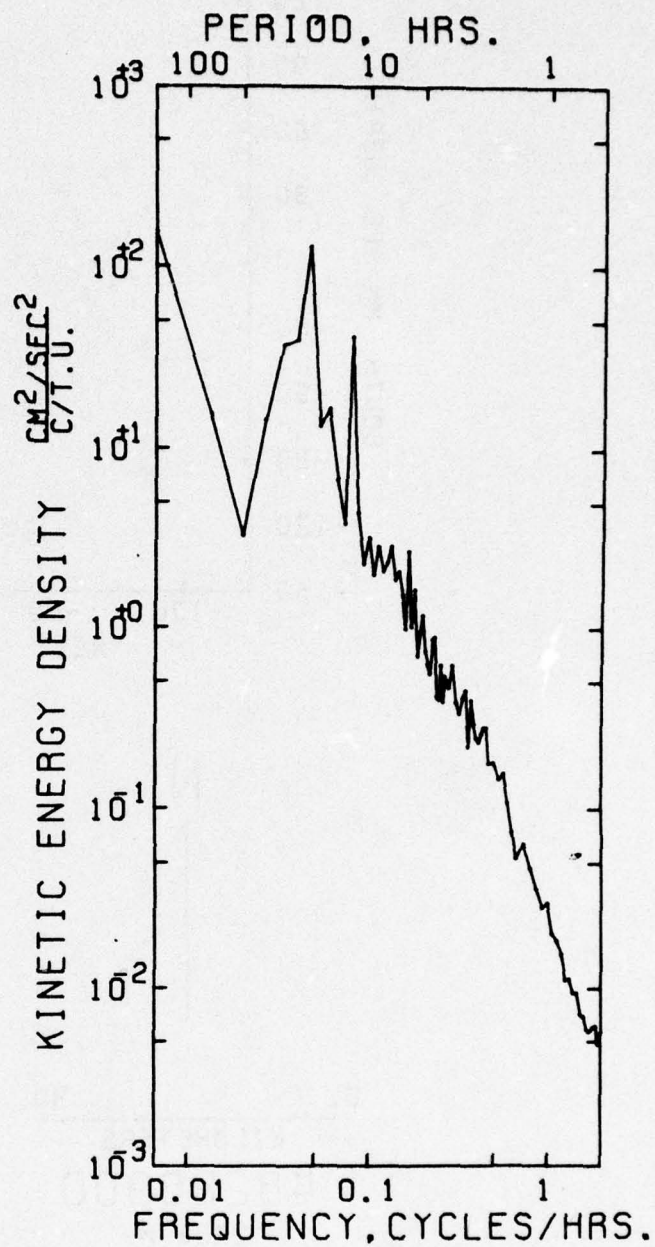
DURATION 25 DAYS 12 H 45 M

MEAN	=	2.790	STD ERR	=	.000
VARIANCE	=	.000			
STD. DEV.	=	.015			
KURTOSIS	=	2.959			
SKEWNESS	=	-.006			

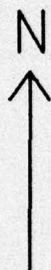
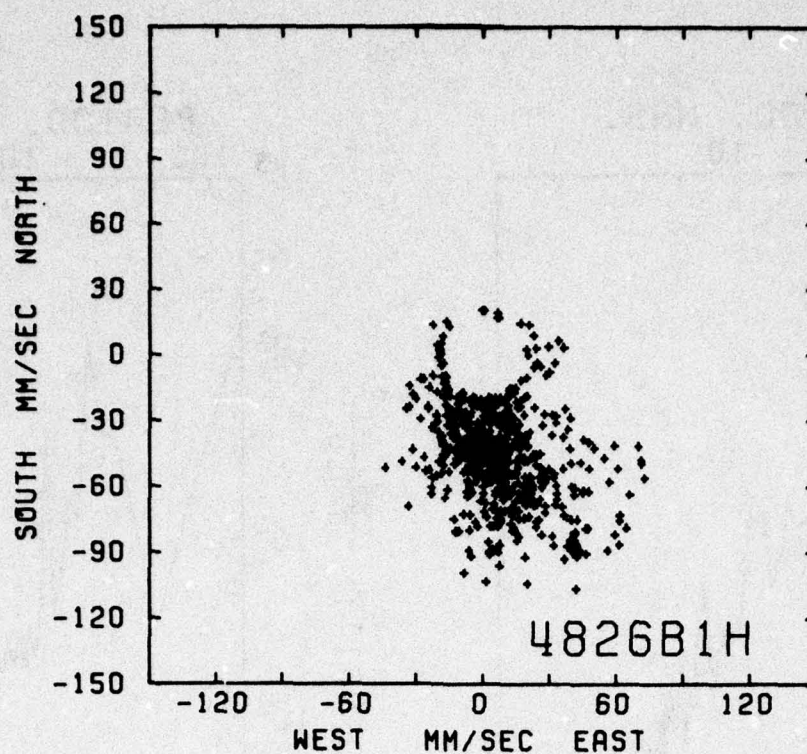
SAMPLE SIZE = 2452 POINTS



AUTO SPECTRUM
 48268900 TEMPERATURE
 2936 METERS
 73-III-12 TO 73-IV-06
 1 PIECES WITH 1215 ESTIMATES
 PER PIECE. AVERAGED OVER
 4 ADJACENT FREQUENCY BANDS



AUTO SPECTRUM
 48268900 EAST
 48268900 NORTH
 2936 METERS
 73-III-12 TO 73-IV-06
 1 PIECES WITH 1215 ESTIMATES
 PER PIECE. AVERAGED OVER
 4 ADJACENT FREQUENCY BANDS



0. 30.
KILOMETERS

4826B900

2936 M

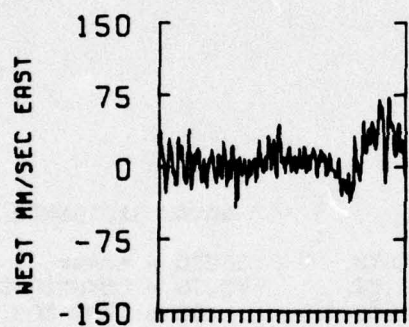
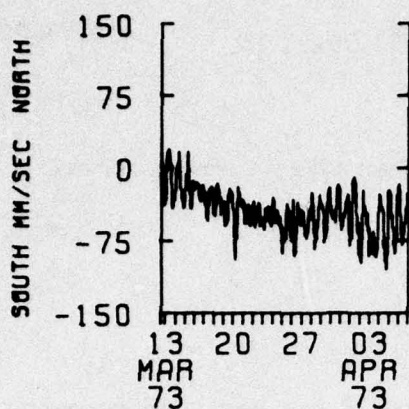
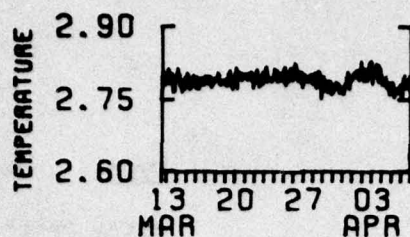
73- III-13 TO 73- IV -06

73-III-13 *

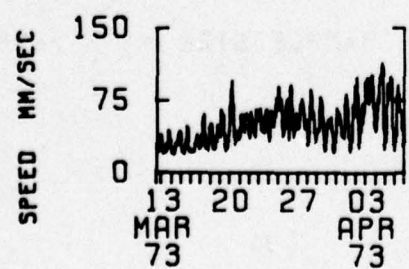
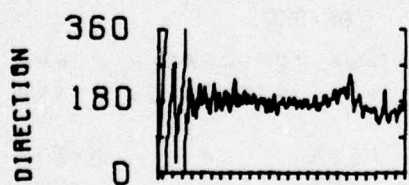
20

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73-IV-01



4826B1H
2936 M



DATA NUMBER 4827

Instrument No.: V-0165

Type: Vector Averaging Current Meter

Depth: 3957 m

Water Depth: 5239 m

Start time: 73-March-12 10.07.30.

Stop time: 73-April-09 11.52.30.

Duration: 28d 1h 45m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

Compass - good

Vane - stuck April 9 to April 24 and May 3 to recovery

Rotor - speeds are very low in places, may be real

Temperature - good

STATS

DATA/ 48278800C

MEAN	=	EAST	NORTH	SPEED	=	*****	EAST & NORTH	*****
STD. ERR.	=	-8.87	-53.86	56.78	=	COVARIANCE	=	-27.80
VARIANCE	=	.28	.33	.30	=	STD. ERR. OF COVARIANCE	=	18.28
STD. DEV.	=	218.33	288.01	238.83	=	STD. DEV. OF COVARIANCE	=	845.05
KURTOSIS	=	14.78	17.28	15.48	=	CORRELATION COEFFICIENT	=	-.108
SKEWNESS	=	2.77	4.20	2.54	=	VECTOR MEAN	=	54.28
		.20	.58	-.09	=	VECTOR VARIANCE	=	258.17
					=	STD. DEV.	=	16.07

UNITS OF RAW DATA VARIABLES = MM/SEC

SAMPLE SIZE = 2696 POINTS *** TEMPERATURE ***
*** DEGREES C. ***

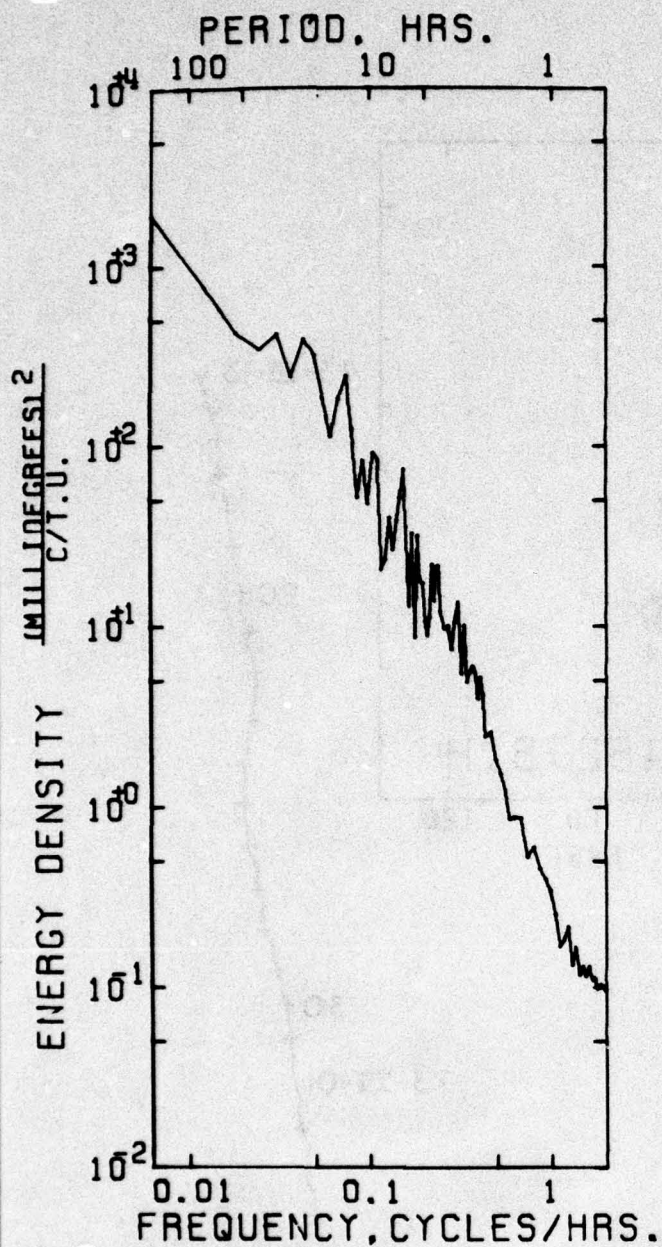
SPANNING RANGE

FROM 73- III-12 10.07.30
TO 73- IV -08 11.52.30

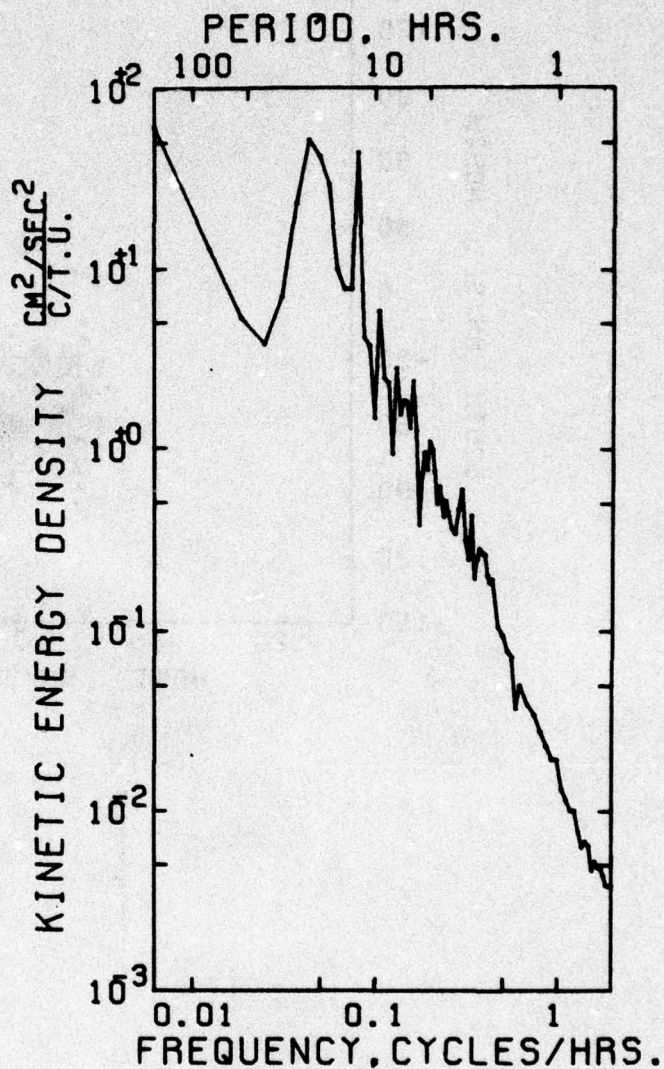
DURATION 28 DAYS 1 H 45 M

MEAN	=	2.332	STD ERR	=	.000
VARIANCE	=	.000			
STD. DEV.	=	.008			
KURTOSIS	=	2.854			
SKEWNESS	=	-.546			

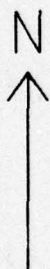
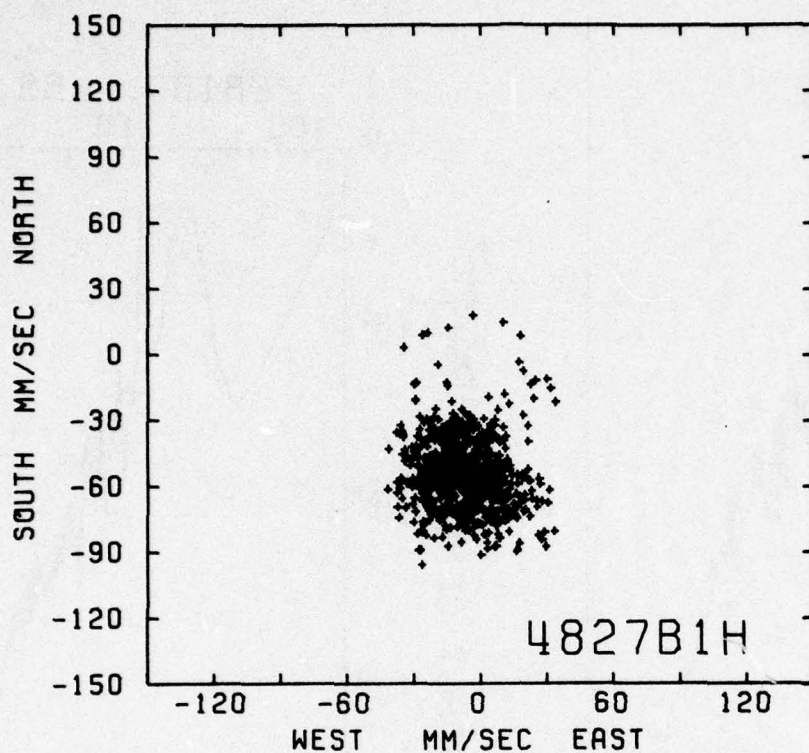
SAMPLE SIZE = 2696 POINTS



AUTO SPECTRUM
48278900 TEMPERATURE
3957 METERS
73-III-12 TO 73-IV-08
1 PIECES WITH 1296 ESTIMATES
PER PIECE. AVERAGED OVER
4 ADJACENT FREQUENCY BANDS



AUTO SPECTRUM
48278900 EAST
48278900 NORTH
3957 METERS
73-III-12 TO 73-IV-08
1 PIECES WITH 1296 ESTIMATES
PER PIECE. AVERAGED OVER
4 ADJACENT FREQUENCY BANDS



0. 40.
KILOMETERS

4827B900

3957 M

73- III-13 TO 73- IV -09

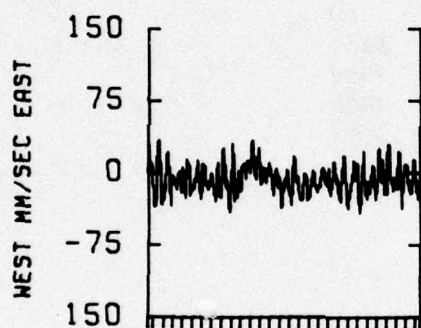
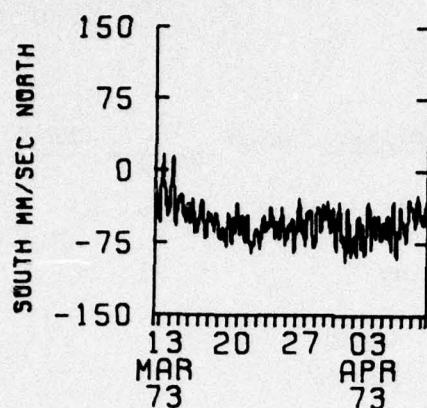
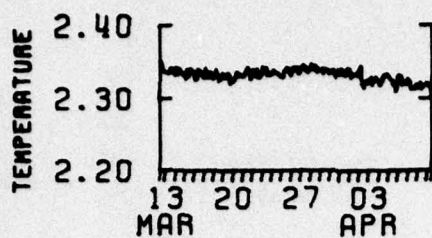
73-III-13

20

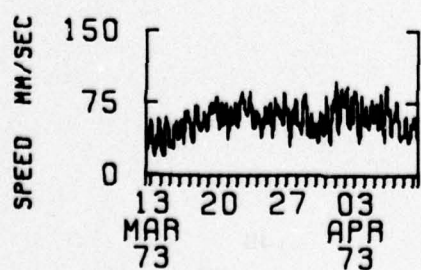
30

73-IV-01

09



4827B1H
3957 M



Mooring No. 483

Set 1973 Mar 12 29° 02.3'N 68° 13.8'W
Year Month Day Latitude Longitude

Set by G. Tupper - R. Heinmiller Ship R.V. CHAIN Cruise 112 Leg 1

Retrieved 1973 July 3
Year Month Day

Retrieved by J. Gifford - R. Heinmiller Ship R.V. CHAIN Cruise 112 Leg 6

Purpose of Mooring: Mooring #15 of MODE 1 array

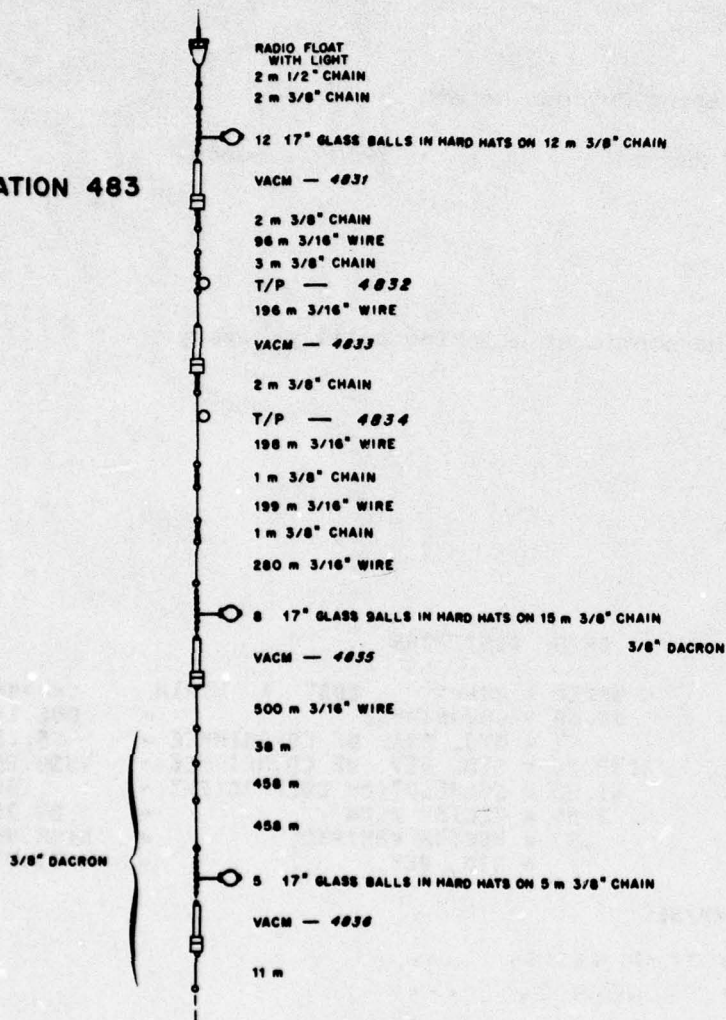
Mooring Type: Subsurface mooring

<u>Key</u>	<u>Data Number</u>	<u>Instrument Number</u>	<u>Type</u>	<u>Depth Meters</u>	<u>Comments</u>
+	4831	V-0113	VACM	447	
#	4832	#43	T/P	550	M.I.T.
*	4833	V-0171	VACM	748	U.R.I.
#	4834	#44	T/P	750	M.I.T.
+	4835	V-0117	VACM	1450	
+	4836	V-0107	VACM	2998	
*	4837	V-0177	VACM	3968	
#	4838	#11	T/P	5087	M.I.T.

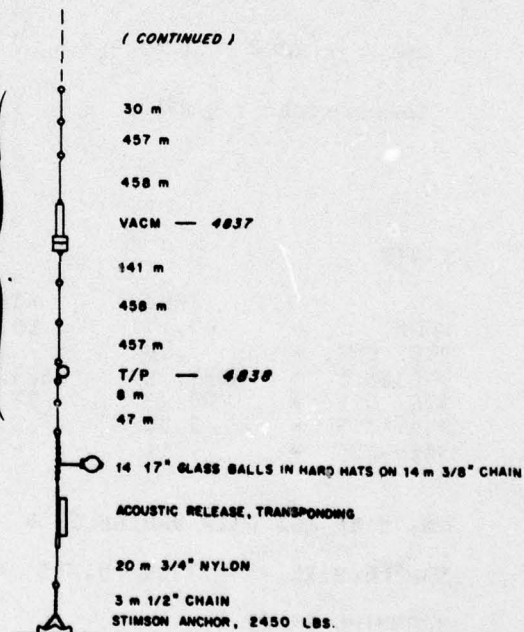
Water depth 5192

COMMENTS ON MOORING:

STATION 483



(CONTINUED)



DATA NUMBER 4833

Instrument No.: V-0171

Type: Vector Averaging Current Meter

Depth: 748 m

Water Depth: 5192 m

Start time: 73-March-12 18.07.30.

Stop time: 73-May-31 23.52.30.

Duration: 60d 5h 45m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

Compass - good

Vane - starts sticking May 31 and continues sticking until recovery.
Daily averages may be O. K.

Rotor - good

Temperature - good

STATS

DATA/ 4833E000A

	EAST	NORTH	SPEED	EAST & NORTH	
MEAN	-7.17	26.84	96.85		805.14
STD. ERR.	.88	.75	.47		55.13
VARIANCE	5984.32	4327.48	1683.20		4839.20
STD. DEV.	77.23	65.78	41.03		.158
KURTOSIS	2.38	3.22	2.61		27.78
SKEWNESS	.11	-.39	.37		5145.80
					71.73

UNITS OF RAW DATA VARIABLES = MM/SEC

SAMPLE SIZE = 7704 POINTS *** TEMPERATURE ***
*** DEGREES C. ***

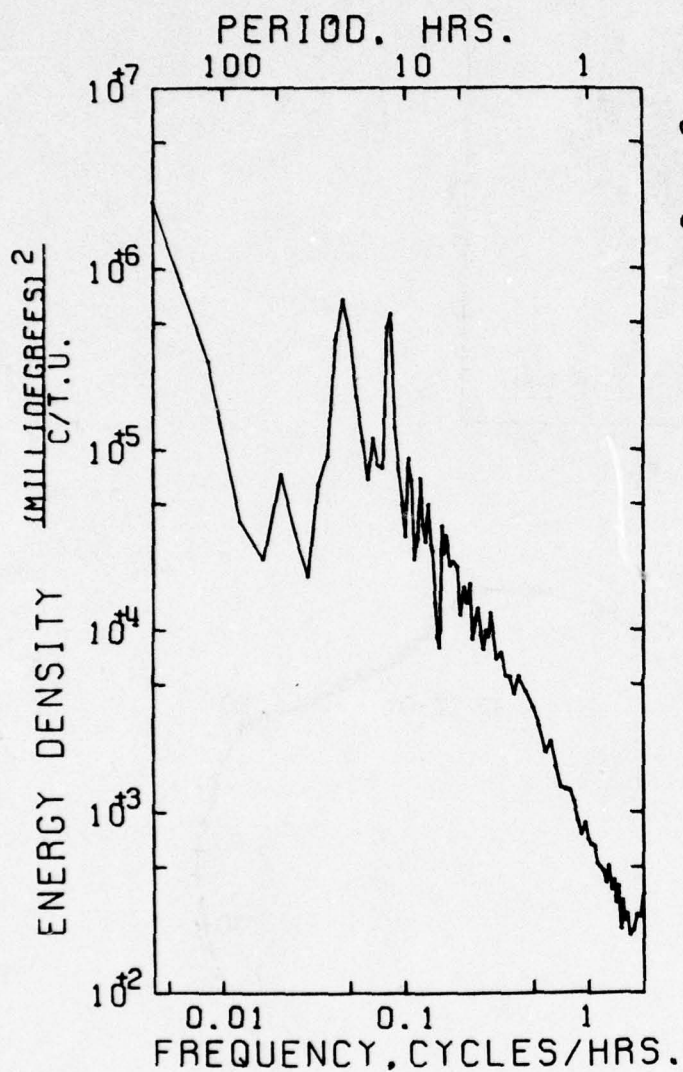
SPANNING RANGE

FROM 73- 111-12 18.07.30
TO 73- V -31 23.52.30

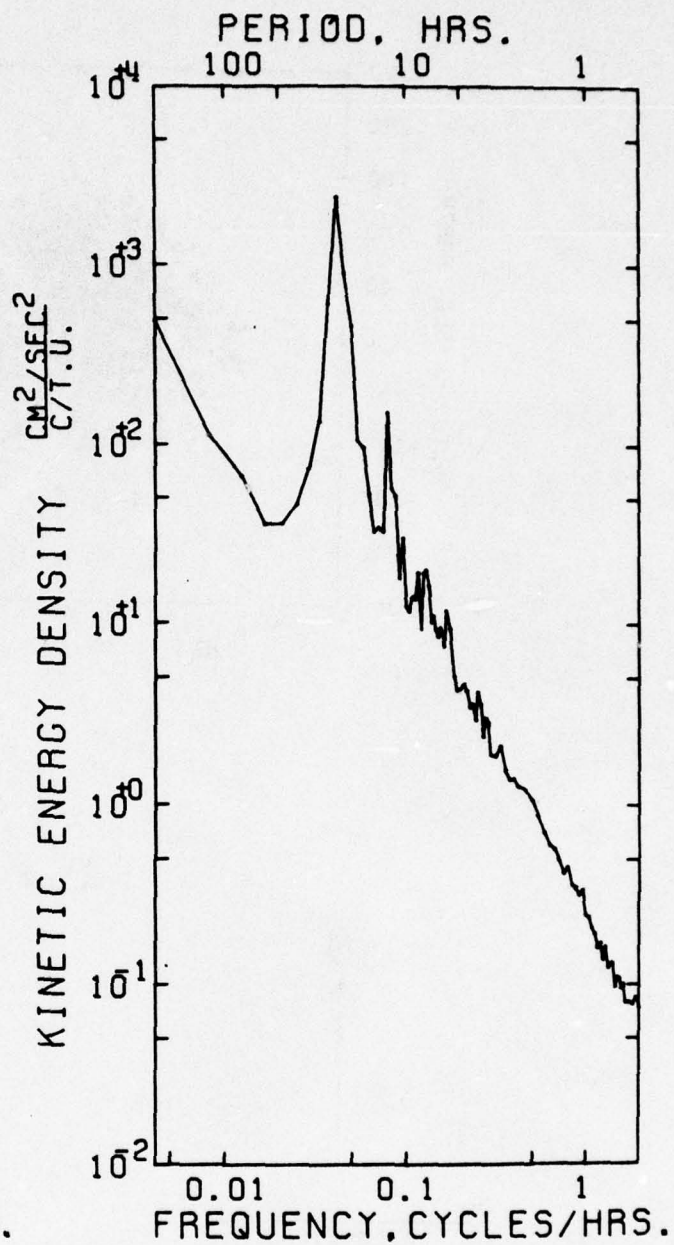
DURATION 80 DAYS 5 H 45 M

MEAN	=	11.382	STD ERR	=	.003
VARIANCE	=	.069			
STD. DEV.	=	.263			
KURTOSIS	=	3.167			
SKEWNESS	=	.462			

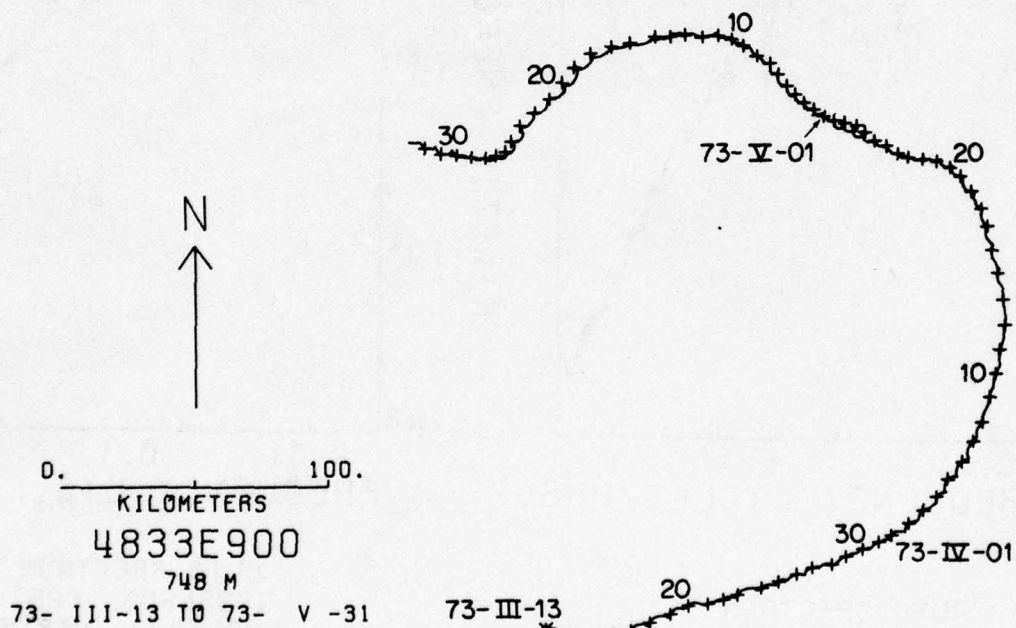
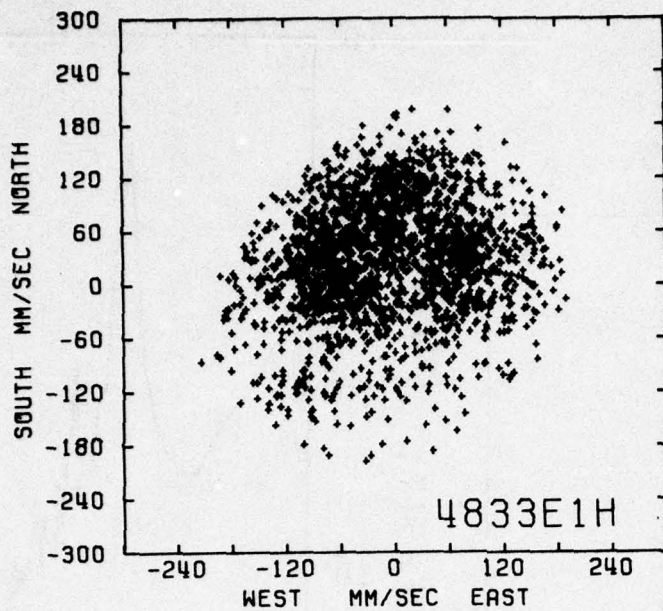
SAMPLE SIZE = 7704 POINTS

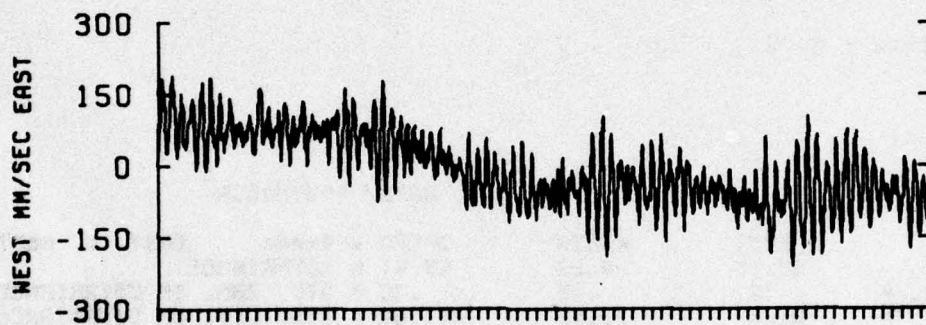
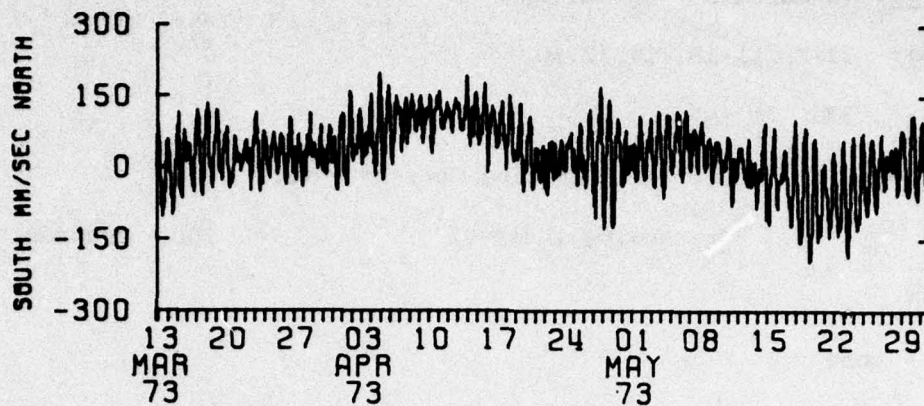
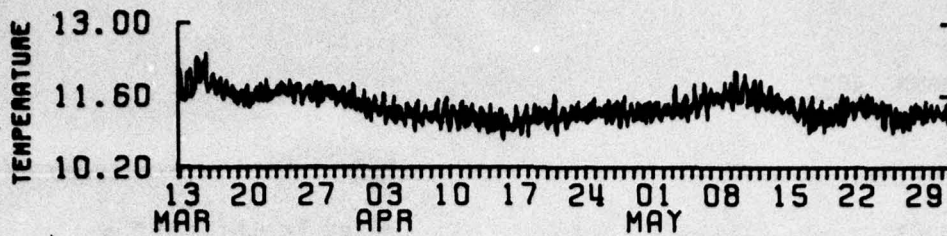


AUTO SPECTRUM
4833E900 TEMPERATURE
748 METERS
73-III-12 TO 73-V-31
1 PIECES WITH 3840 ESTIMATES
PER PIECE. AVERAGED OVER
8 ADJACENT FREQUENCY BANDS



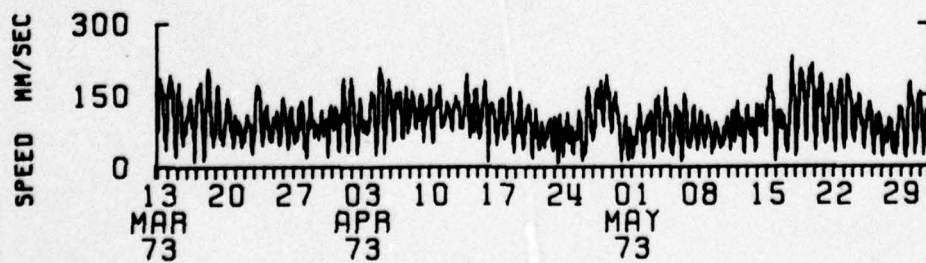
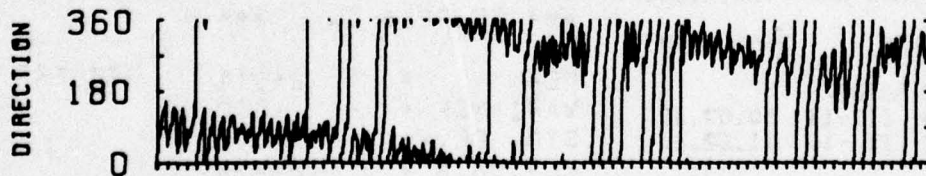
AUTO SPECTRUM
4833E900 EAST
4833E900 NORTH
748 METERS
73-III-12 TO 73-V-31
1 PIECES WITH 3840 ESTIMATES
PER PIECE. AVERAGED OVER
8 ADJACENT FREQUENCY BANDS





4833E1H

748 M



DATA NUMBER 4837

Instrument No.: V-0177

Type: Vector Averaging Current Meter

Depth: 3968

Water Depth: 5192 m

Start time: 73-March-13 10.07.30.

Stop time: 73-April-19 11.52.30.

Duration: 37d 1h 45m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

Compass - good

Vane - sticky after April 20, stuck after May 19

Rotor - low speeds, may be real

Temperature - good

STATS

DATA/ 48378900A

	EAST	NORTH	SPEED	EAST & NORTH	
MEAN	-32.16	-8.89	43.41		-46.36
STD. ERR.	.21	.45	.20		15.40
VARIANCE	162.34	731.45	141.02		918.00
STD. DEV.	12.74	27.05	11.88		30.45
KURTOSIS	3.02	2.69	2.73		33.85
SKEWNESS	.05	.72	.34		446.80
				STD. DEV.	21.14

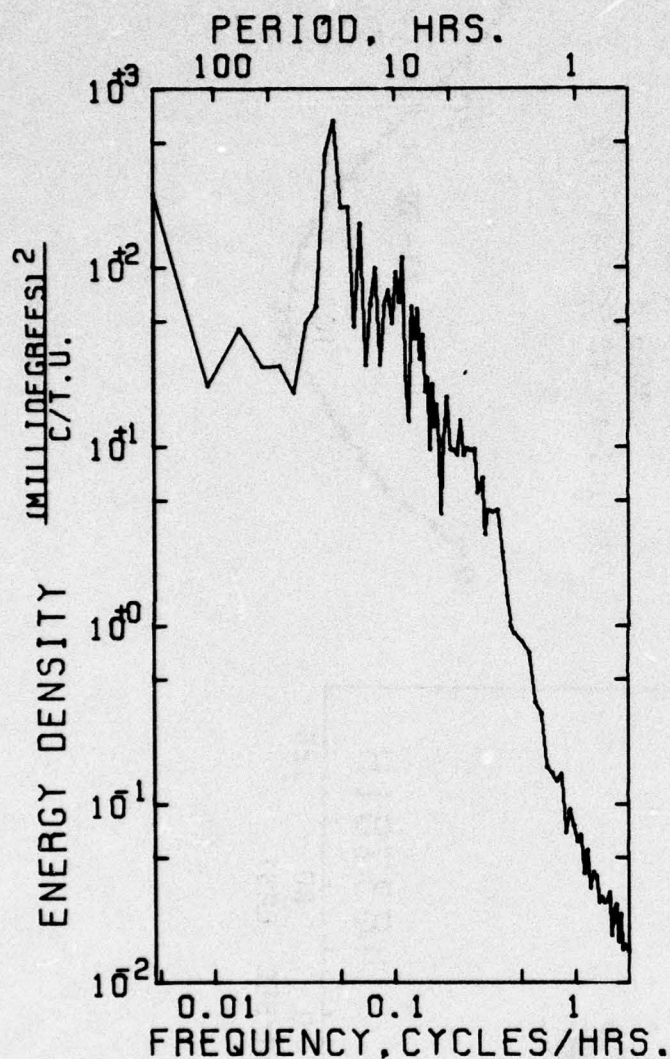
UNITS OF RAW DATA VARIABLES = *** TEMPERATURE ***

*** DEGREES C. ***

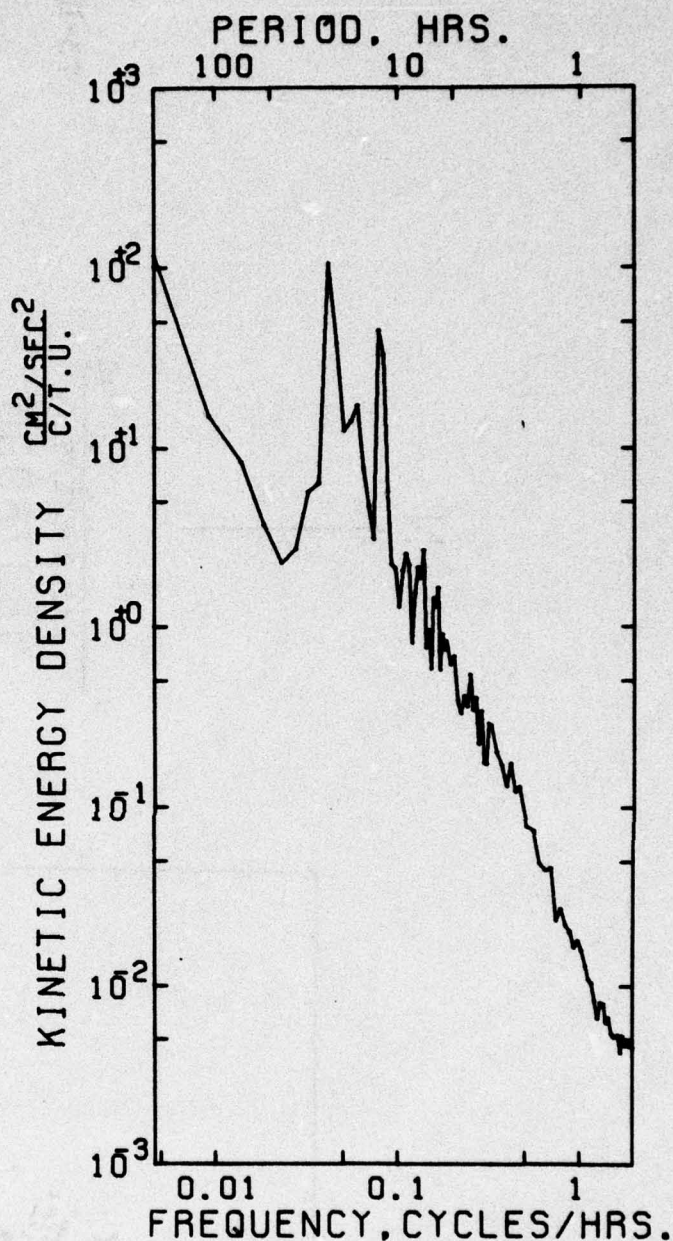
SAMPLE SIZE = 3560 POINTS

SPANNING RANGE	MEAN	2.311	STD ERR	.000
FROM 73- III-13 10.07.30	VARIANCE	.000		
TO 73- IV-19 11.52.30	STD. DEV.	.005		
DURATION 37 DAYS 1 H 45 M	KURTOSIS	2.834		
	SKEWNESS	.266		

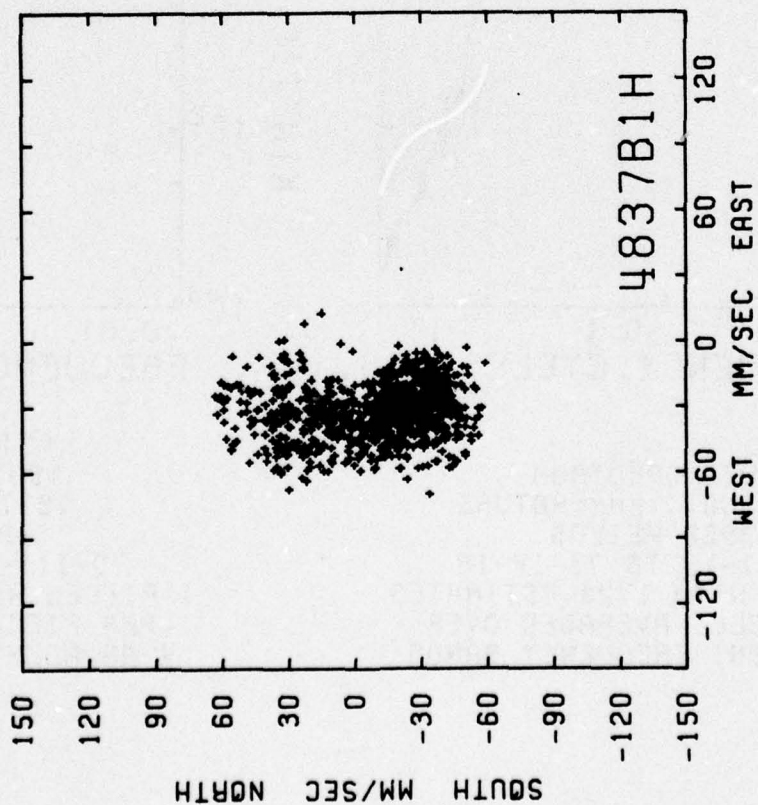
SAMPLE SIZE = 3560 POINTS



AUTO SPECTRUM
 48378900 TEMPERATURE
 3968 METERS
 73-III-13 TO 73-IV-18
 1 PIECES WITH 1728 ESTIMATES
 PER PIECE. AVERAGED OVER
 4 ADJACENT FREQUENCY BANDS



AUTO SPECTRUM
 48378900 EAST
 48378900 NORTH
 3968 METERS
 73-III-13 TO 73-IV-18
 1 PIECES WITH 1728 ESTIMATES
 PER PIECE. AVERAGED OVER
 4 ADJACENT FREQUENCY BANDS



N ↑

0. 40.
KILOMETERS

4837B900

3968 M

73- III-14 TO 73- IV -19

73-III-14 *

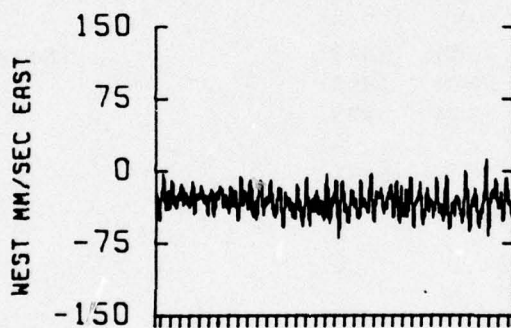
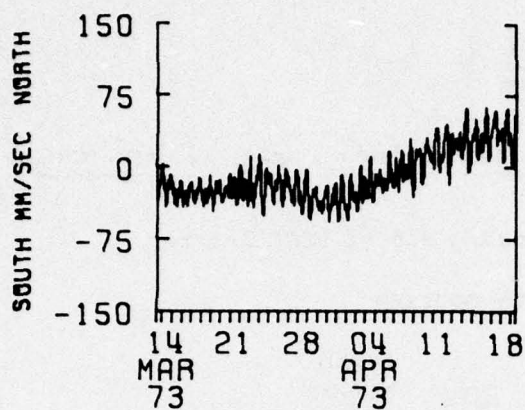
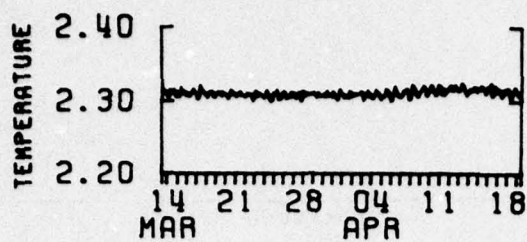
20

30

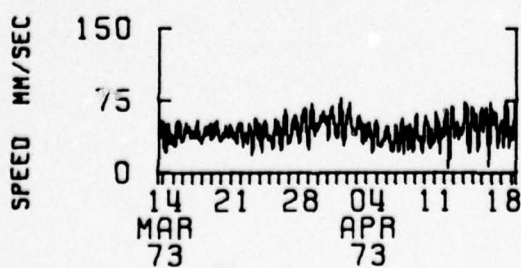
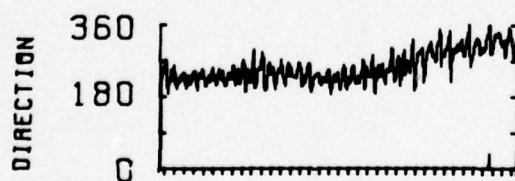
73-IV-01

10

19



4837B1H
3968 M



Mooring No. 484

Set 1973 Mar 13 27° 25.1'N 67° 59.5'W
Year Month Day Latitude Longitude

Set by J. Gifford - R. Heinmiller Ship R.V. CHAIN Cruise 112 Leg 1

Retrieved 1973 July 3
Year Month Day

Retrieved by G. Tupper - R. Heinmiller Ship R.V. CHAIN Cruise 112 Leg 6

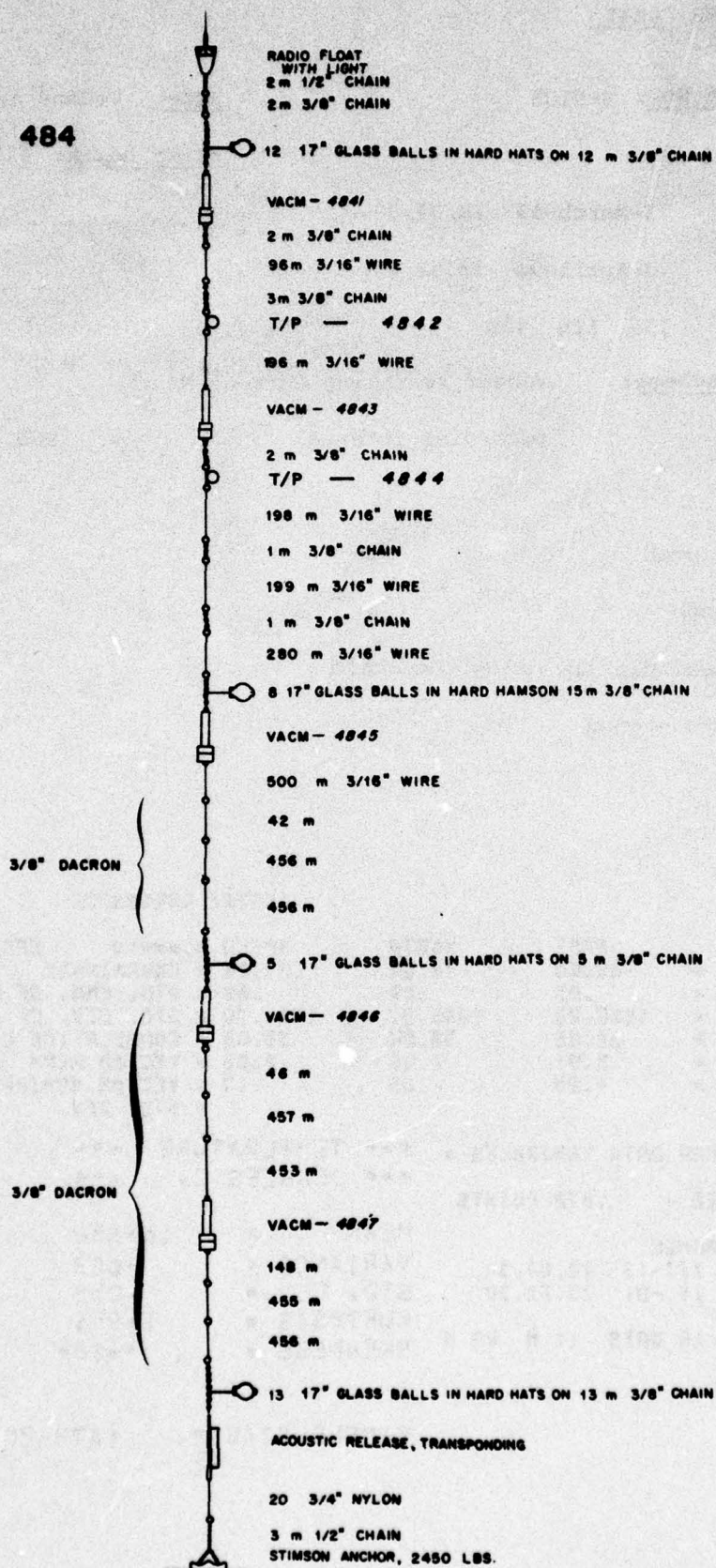
Purpose of Mooring: Mooring #16 of MODE 1 array

Mooring Type: Subsurface mooring

<u>Key</u>	<u>Data Number</u>	<u>Instrument Number</u>	<u>Type</u>	<u>Depth Meters</u>	<u>Comments</u>
*	4841	V-0108	VACM	441	
#	4842	#50	T/P	543	M.I.T.
*	4843	V-0175	VACM	741	U.R.I.
#	4844	#45	T/P	744	M.I.T.
	4845	V-0114	VACM	1443	No recoverable data
+	4846	V-0181	VACM	2953	
*	4847	V-0185	VACM	3923	
	Water depth			5151	

COMMENTS ON MOORING:

STATION 484



DATA NUMBER 4841

Instrument No.: V-0108

Type: Vector Averaging Current Meter

Depth: 441 m

Water Depth: 5151 m

Start time: 73-March-13 12.07.30.

Stop time: 73-April-01 23.52.30.

Duration: 19d 11h 45m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

Compass - good

Vane - good

Rotor - periodically below threshold

Temperature - good

STATS

DATA/ 48418900A

	EAST	NORTH	SPEED	*****	EAST & NORTH	*****
MEAN	-06.60	-20.84	107.24	* COVARIANCE		505.14
STD. ERR.	.83	.89	.89	* STD. ERR. OF COVARIANCE		103.57
VARIANCE	1200.48	1485.37	1486.70	* STD. DEV. OF COVARIANCE		4480.87
STD. DEV.	36.05	38.54	38.56	* CORRELATION COEFFICIENT		.384
KURTOSIS	9.01	2.48	2.85	* VECTOR MEAN		101.01
SKEWNESS	-.20	-.05	.17	* VECTOR VARIANCE		1392.43
				* STD. DEV.		37.32

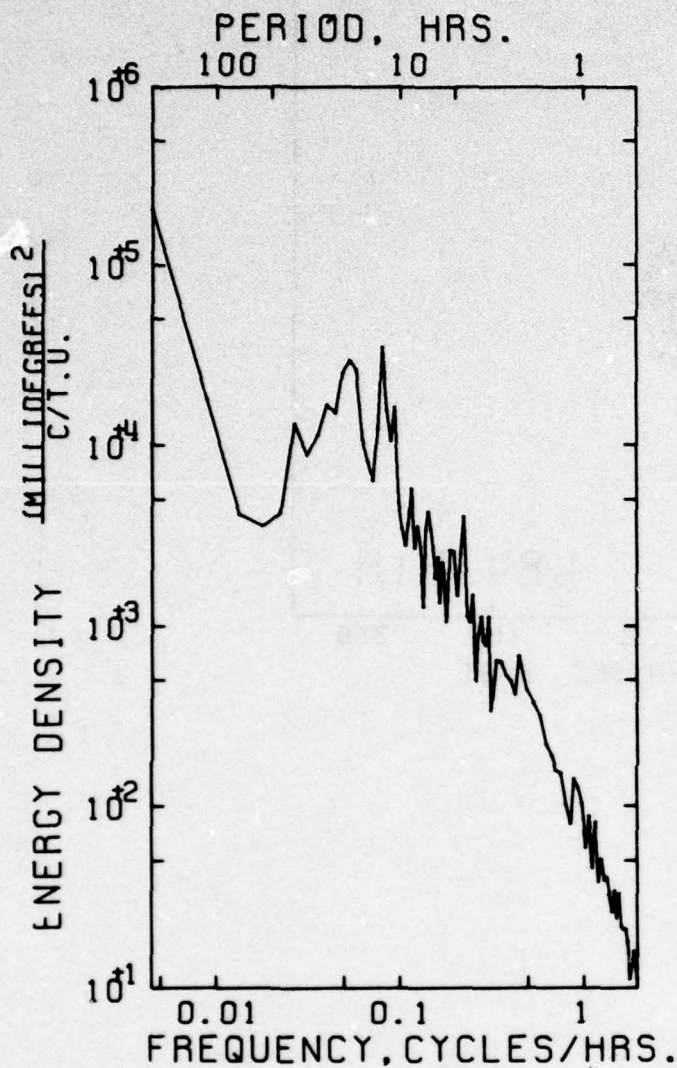
UNITS OF RAW DATA VARIABLES = *** TEMPERATURE ***

*** DEGREES C. ***

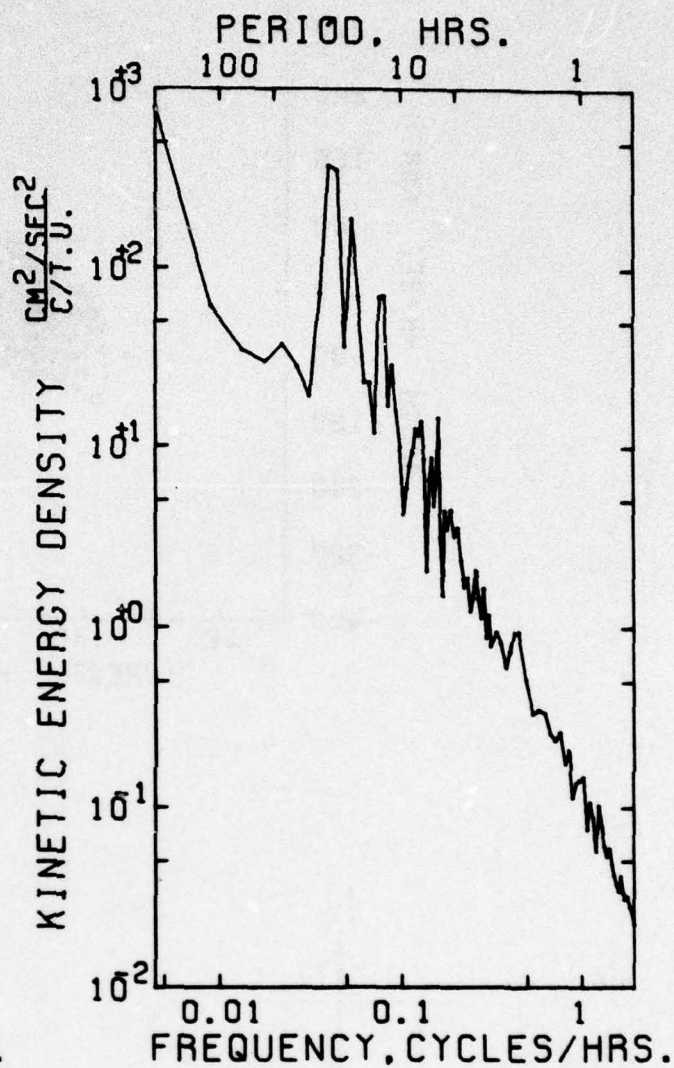
SAMPLE SIZE = 1872 POINTS

SPANNING RANGE	MEAN	16.852	STD ERR	.001
FROM 73- III-13 12.07.30	VARIANCE	.003		
TO 73- IV -01 23.52.30	STD. DEV.	.058		
	KURTOSIS	2.951		
DURATION 18 DAYS 11 H 45 M	SKEWNESS	-.264		

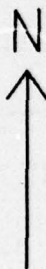
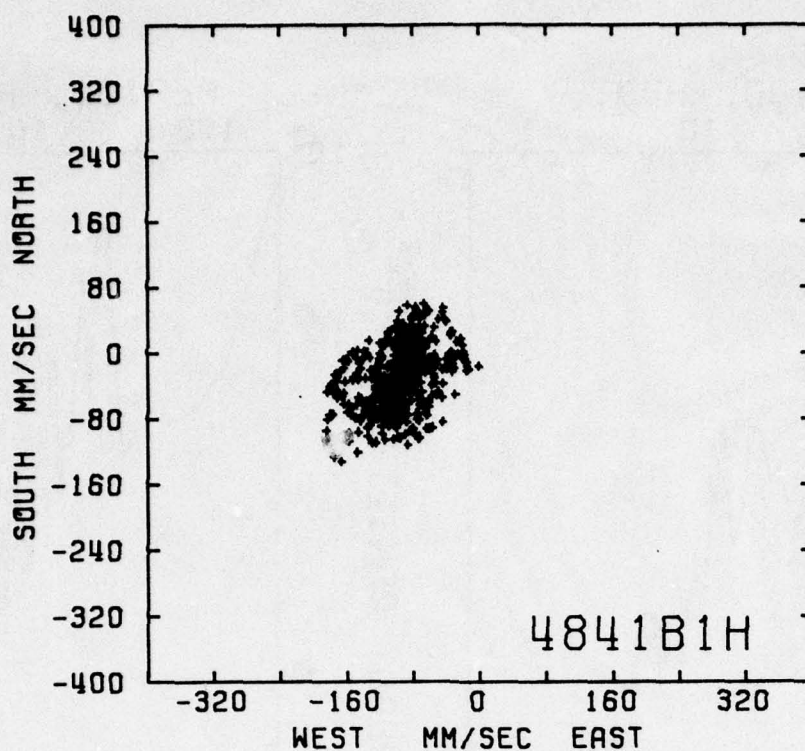
SAMPLE SIZE = 1872 POINTS



AUTO SPECTRUM
48418900 TEMPERATURE
441 METERS
73-III-13 TO 73-IV-01
1 PIECES WITH 900 ESTIMATES
PER PIECE. AVERAGED OVER
2 ADJACENT FREQUENCY BANDS



AUTO SPECTRUM
48418900 EAST
48418900 NORTH
441 METERS
73-III-13 TO 73-IV-01
1 PIECES WITH 900 ESTIMATES
PER PIECE. AVERAGED OVER
2 ADJACENT FREQUENCY BANDS



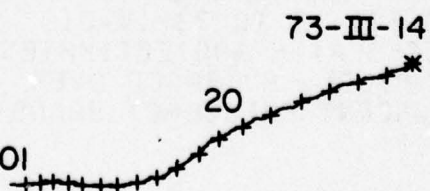
0. 150.
KILOMETERS

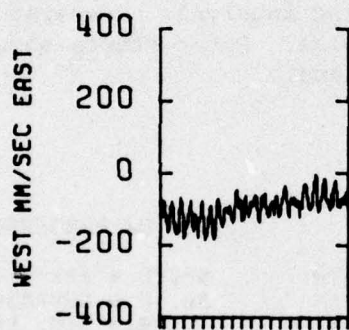
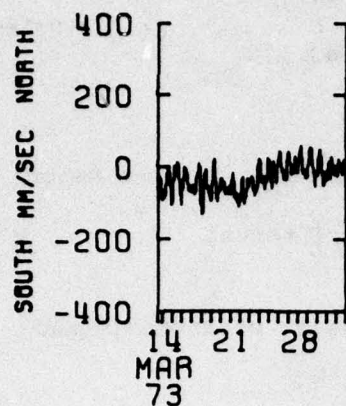
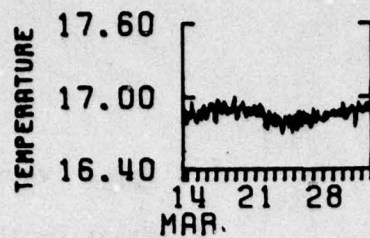
4841B900

441 M

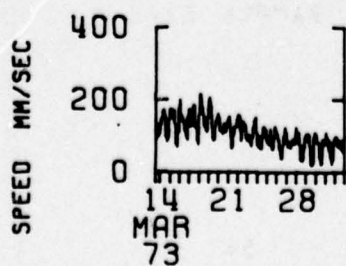
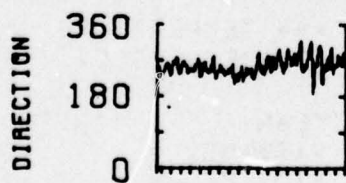
73- III-14 TO 73- IV -01

73-IV-01





4841B1H
441 M



DATA NUMBER 4843

Instrument No.: V-0175

Type: Vector Averaging Current Meter

Depth: 741 m

Water Depth: 5151 m

Start time: 73-March-13 16.07.40.

Stop time: 73-May-09 17.52.40.

Duration: 57d 1h 45m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

Instrument owned by the University of Rhode Island

Compass - good

Vane - stuck or sticking from May 27 to end

Rotor - Compass and vane data were not stored on tape unless there was a rotor count during the recording interval. Temperature values were stored on tape regardless of rotor value. Rotor starts showing threshold values (0 rotor count) from May 9 to end.

Temperature - good

STATS

DATA/ 4843E800A

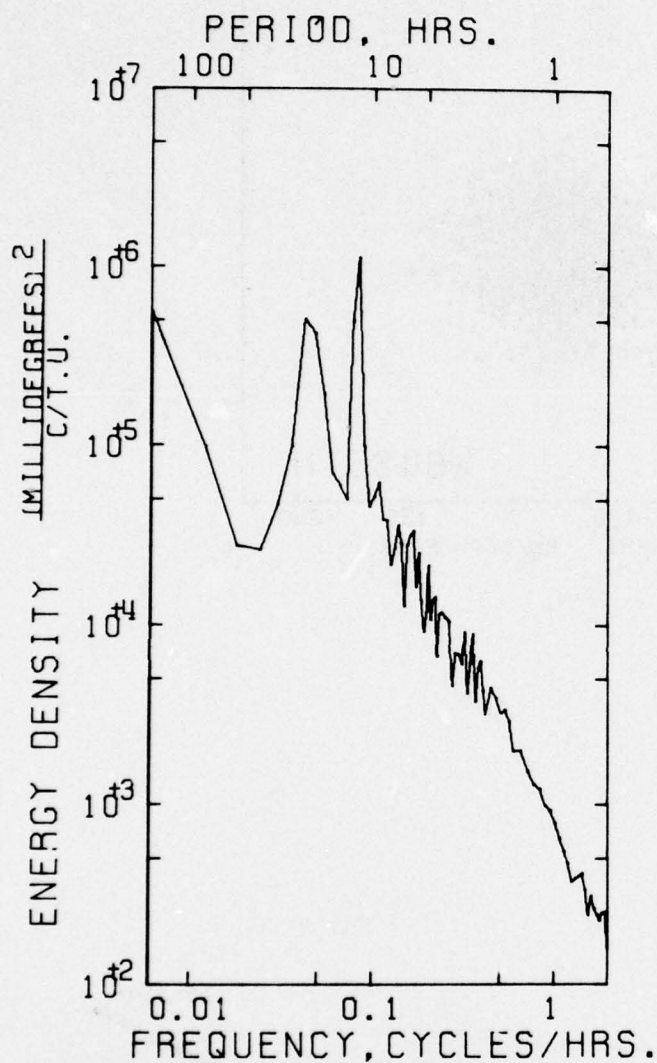
MEAN	=	EAST	NORTH	SPEED	=	*****	EAST & NORTH	*****
STD. ERR.	=	-48.40	-16.33	80.10	=	COVARIANCE	=	48.36
VARIANCE	=	.68	.67	.48	=	STD. ERR. OF COVARIANCE	=	48.78
STD. DEV.	=	2557.58	2458.64	1305.07	=	STD. DEV. OF COVARIANCE	=	3809.44
KURTOSIS	=	50.57	48.56	36.13	=	CORRELATION COEFFICIENT	=	.018
SKEWNESS	=	2.95	2.68	2.92	=	VECTOR MEAN	=	52.09
	=	.19	.11	.56	=	VECTOR VARIANCE	=	2507.11
					=	STD. DEV.	=	50.07

UNITS OF RAW DATA VARIABLES = *** TEMPERATURE ***

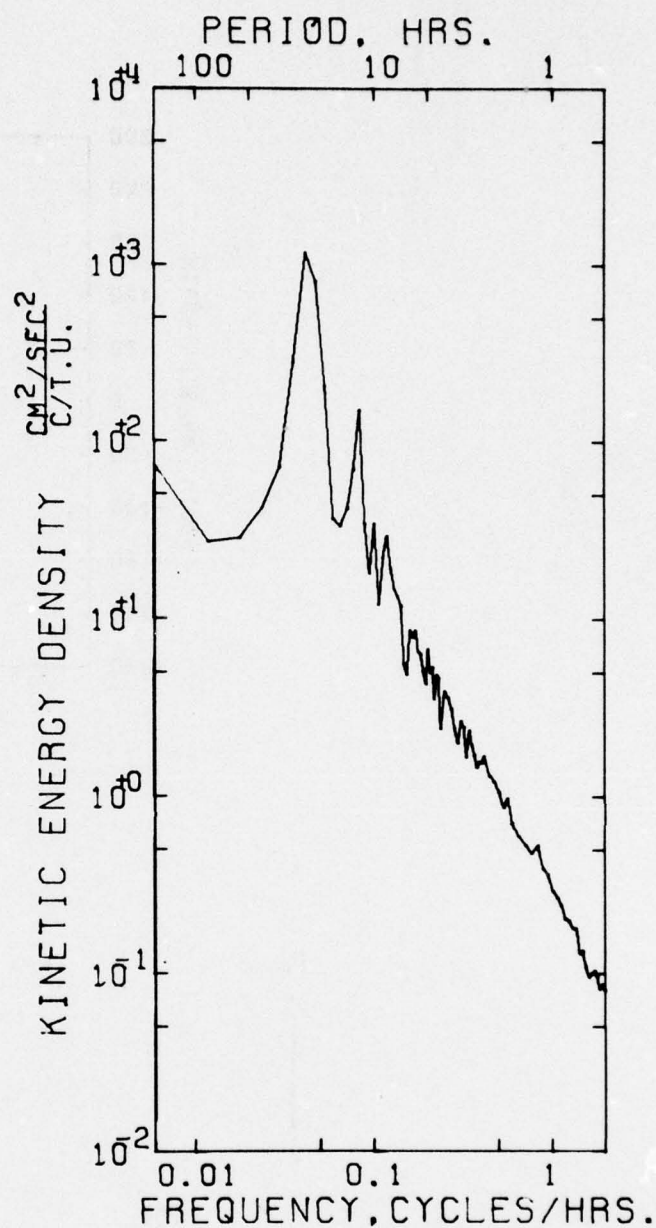
SAMPLE SIZE = 5480 POINTS *** DEGREES C. ***

SPANNING RANGE	MEAN	=	11.003	STD ERR	=	.004
FROM 73- III-13 16.07.40	VARIANCE	=	.075			
TO 73- V -08 17.52.40	STD. DEV.	=	.274			
DURATION 57 DAYS 1 H 45 M	KURTOSIS	=	2.269			
	SKEWNESS	=	-.16			

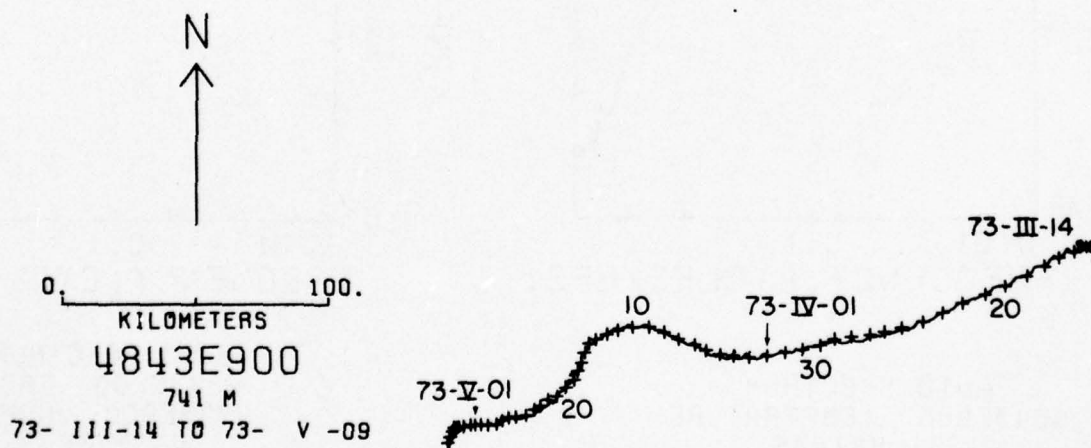
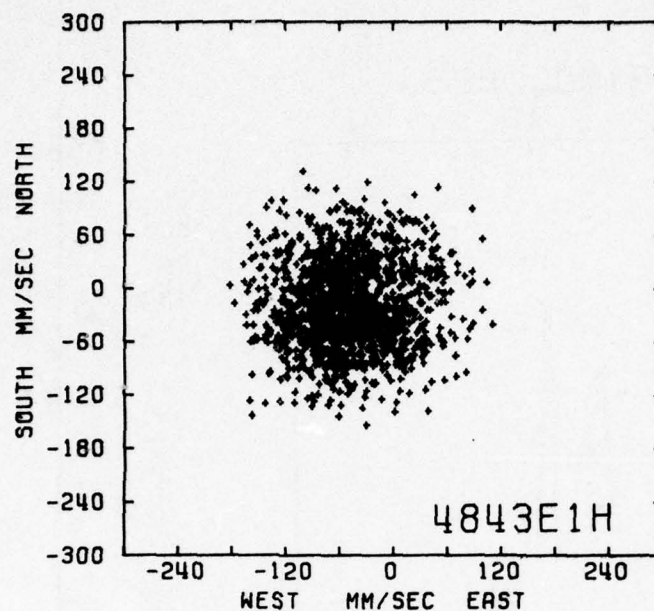
SAMPLE SIZE = 5480 POINTS

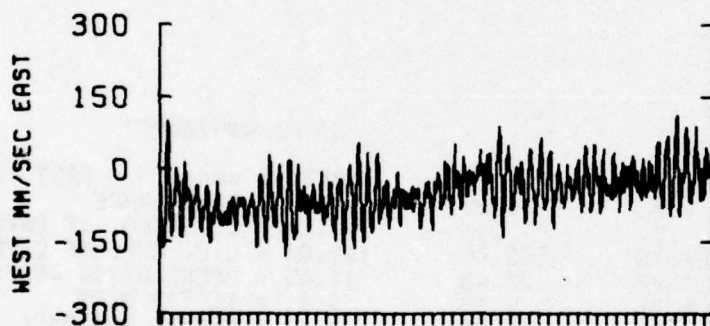
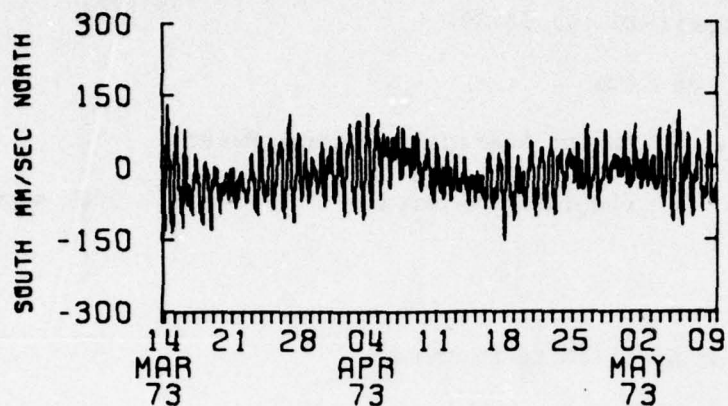
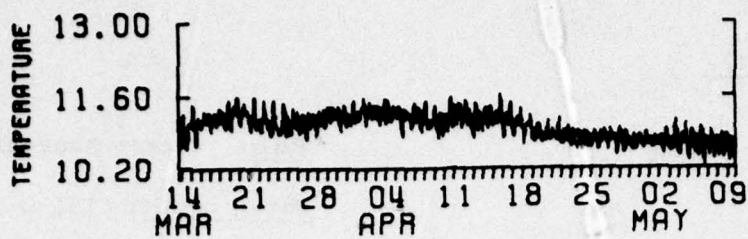


AUTO SPECTRUM
4843E900 TEMPERATURE
741 METERS
73-III-13 TO 73-V-08
1 PIECES WITH 2700 ESTIMATES
PER PIECE. AVERAGED OVER
8 ADJACENT FREQUENCY BANDS



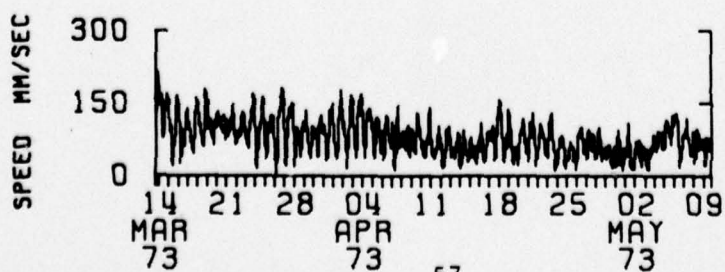
AUTO SPECTRUM
4843E900 EAST
4843E900 NORTH
741 METERS
73-III-13 TO 73-V-08
1 PIECES WITH 2700 ESTIMATES
PER PIECE. AVERAGED OVER
8 ADJACENT FREQUENCY BANDS





4843E1H

741 M



DATA NUMBER 4847

Instrument No.: V-0185

Type: Vector Averaging Current Meter

Depth: 3973 m

Water Depth: 5151 m

Start time: 73-March-13 23.07.30.

Stop time: 73-April-10 03.52.30.

Duration: 27d 4h 45m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

Compass - good

Vane - stuck from April 10 to recovery

Rotor - very low speeds, may be real

STATS

DATA/ 48478900A

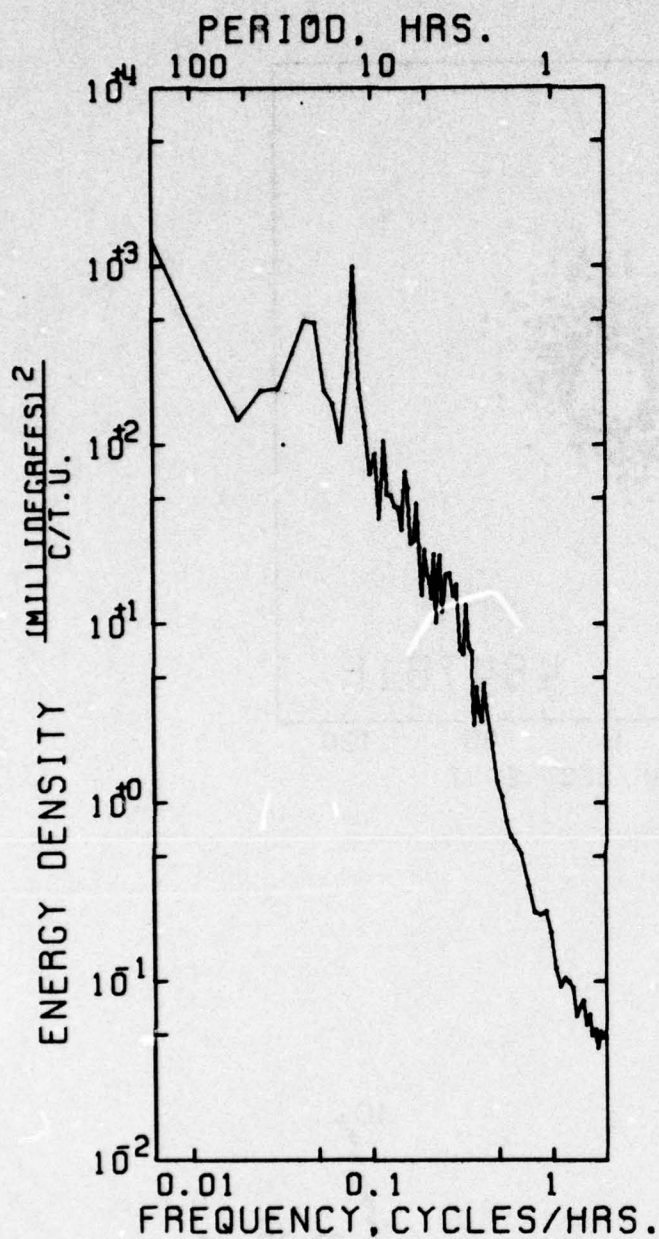
	EAST	NORTH	SPEED	EAST & NORTH	
MEAN	-0.32	8.04	28.78	COVARIANCE	95.81
STD. ERR.	.39	.46	.22	STD. ERR. OF COVARIANCE	7.88
VARIANCE	382.70	550.44	122.02	STD. DEV. OF COVARIANCE	392.41
STD. DEV.	19.82	23.46	11.05	CORRELATION COEFFICIENT	.208
KURTOSIS	2.76	2.34	3.81	VECTOR MEAN	8.05
SKEWNESS	-.09	-.60	1.18	VECTOR VARIANCE	471.57
				STD. DEV.	21.72

UNITS OF RAW DATA VARIABLES = MM/SEC

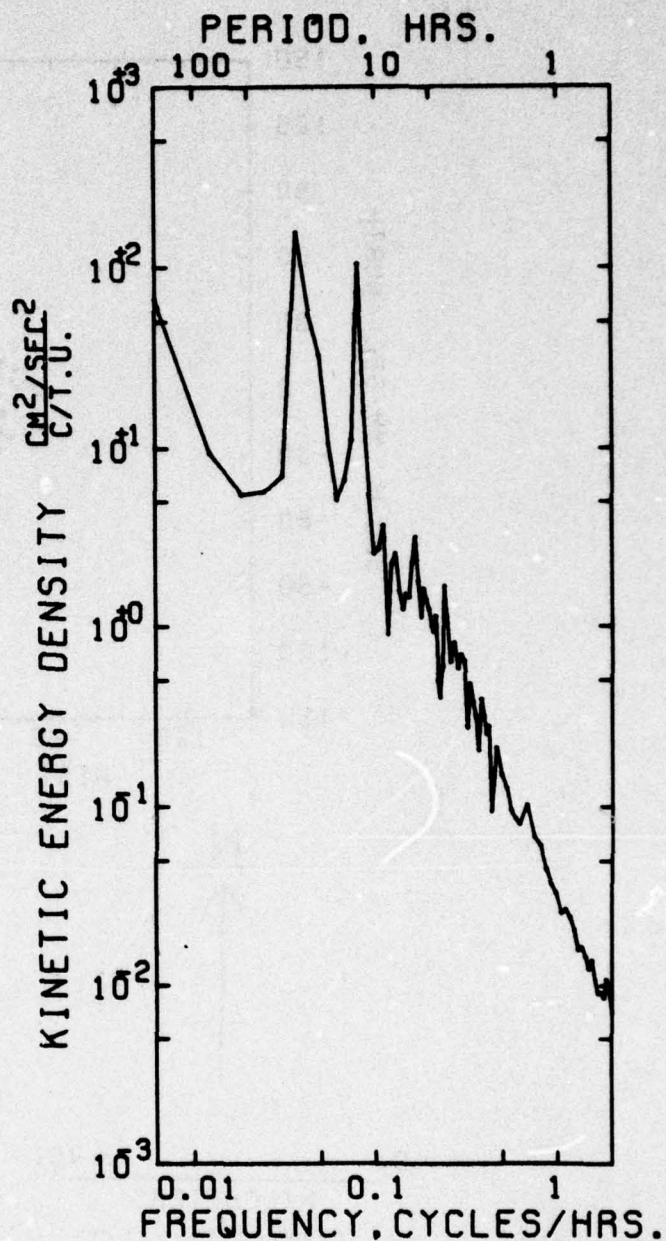
SAMPLE SIZE = 2612 POINTS *** TEMPERATURE ***
*** DEGREES C. ***

SPANNING RANGE
FROM 73- III-13 23.07.30
TO 73- IV -10 03.52.30
MEAN = 2.343 STD ERR = .JOC
VARIANCE = .000
STD. DEV. = .009
KURTOSIS = 2.461
SKEWNESS = .155

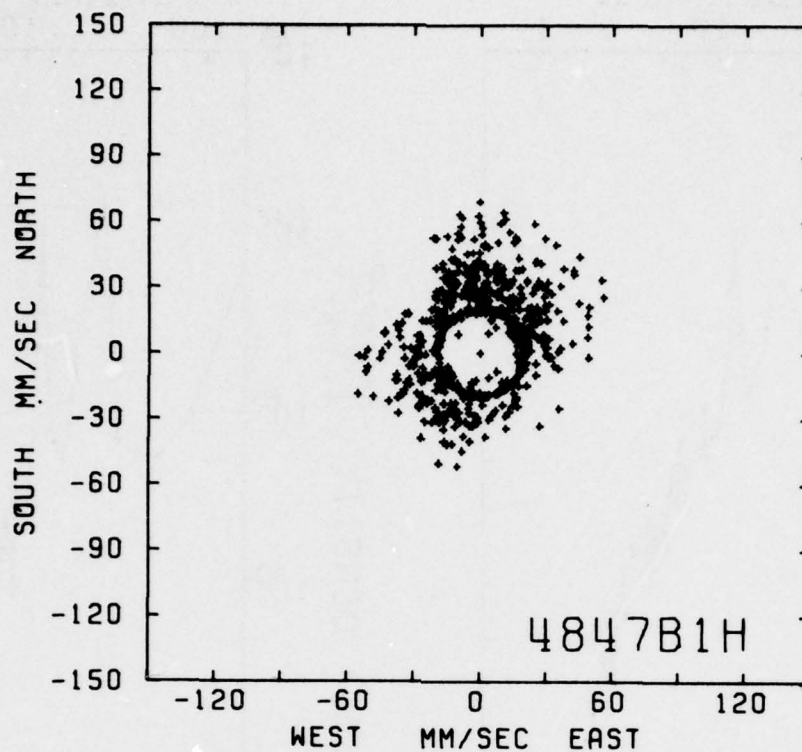
SAMPLE SIZE = 2612 POINTS



AUTO SPECTRUM
48478900 TEMPERATURE
3973 METERS
73-111-13 TO 73-IV-09
1 PIECES WITH 1296 ESTIMATES
PER PIECE. AVERAGED OVER
4 ADJACENT FREQUENCY BANDS



AUTO SPECTRUM
48478900 EAST
48478900 NORTH
3973 METERS
73-111-13 TO 73-IV-09
1 PIECES WITH 1296 ESTIMATES
PER PIECE. AVERAGED OVER
4 ADJACENT FREQUENCY BANDS

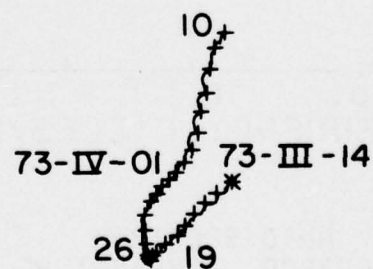


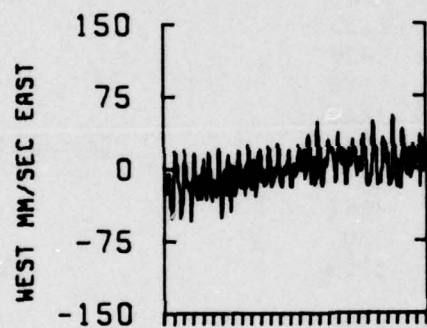
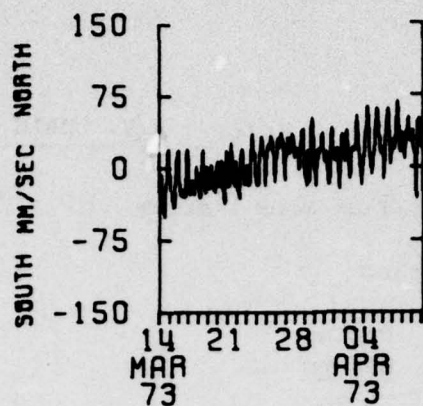
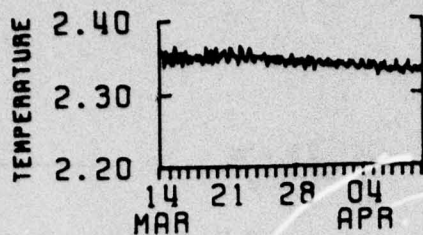
0. 40.
KILOMETERS

4847B900

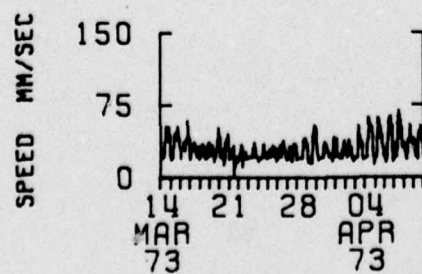
3973 M

73- III-14 TO 73- IV -10





4847B1H
3973 M



Mooring No. 485

Set 1973 Mar 13 26° 23.8'N 69° 21.0'W
Year Month Day Latitude Longitude

Set by G. Tupper - R. Heinmiller Ship R.V. CHAIN Cruise 112 Leg 1

Retrieved 1973 July 2
Year Month Day

Retrieved by J. Gifford - R. Heinmiller Ship R.V. CHAIN Cruise 112 Leg 6

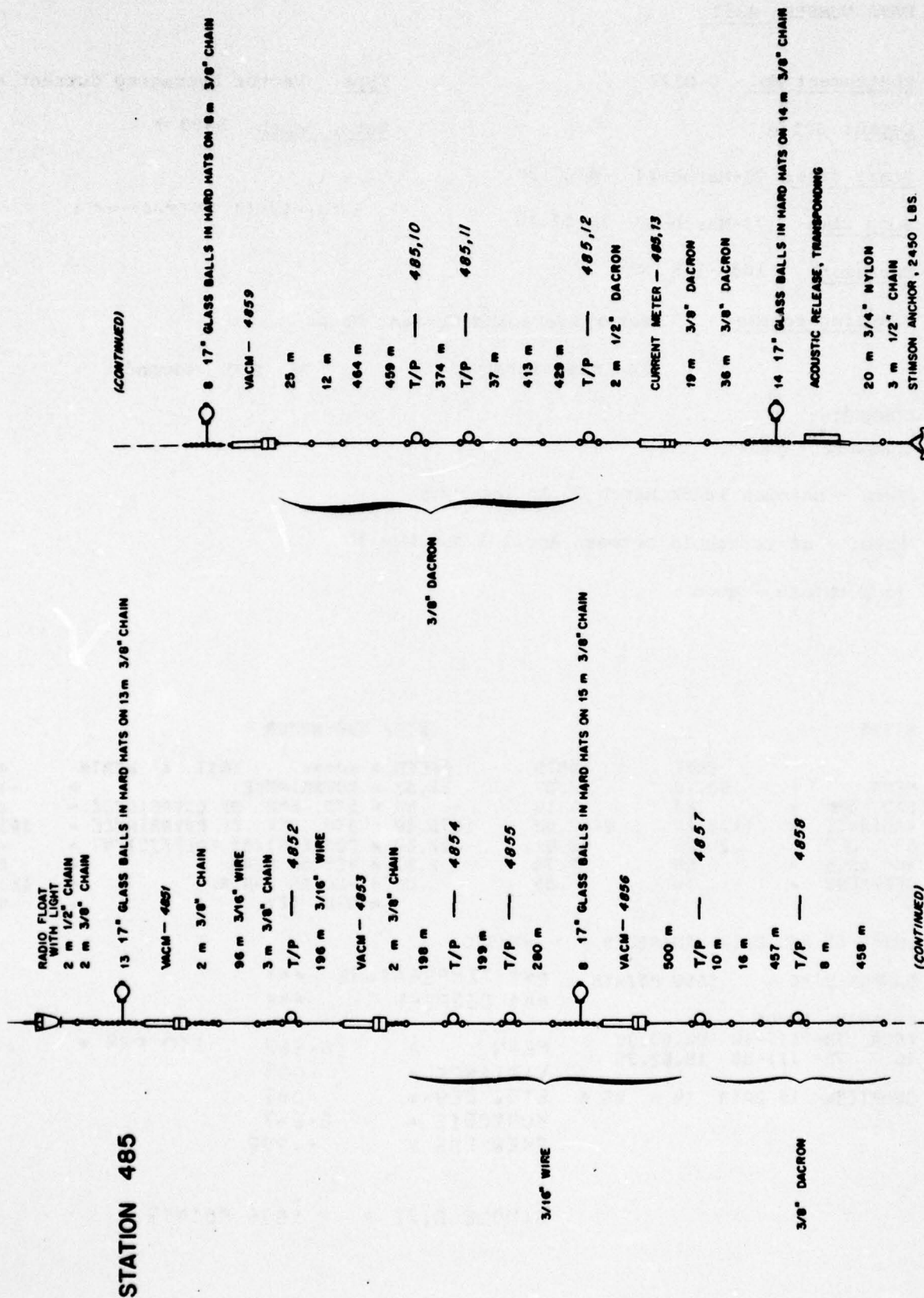
Purpose of Mooring: Mooring #11 of MODE 1 array

Mooring Type: Subsurface mooring

Key	Data Number	Instrument Number	Type	Depth Meters	Comments
*	4851	V-078	VACM	421	
#	4852	#39	T/P	520	M.I.T.
*	4853	V-0155	VACM	723	I.O.S.
	4854	#57	T/P	928	M.I.T., flooded
#	4855	#60	T/P	1133	M.I.T.
*	4856	V-0139	VACM	1426	
#	4857	#20	T/P	1926	M.I.T.
#	4858	#19	T/P	2442	M.I.T.
	4859	V-0136	VACM	2943	Installation error, no data
+	485,10	#27	T/P	3981	M.I.T.
#	485,11	#32	T/P	4387	M.I.T.
+	485,12	#10	T/P	5305	M.I.T.
	485,13	H-871	Film	5309	Nova University

Water depth 5420

COMMENTS ON MOORING:



DATA NUMBER 4851

Instrument No.: V-0178

Type: Vector Averaging Current Meter

Depth: 421 m

Water Depth: 5420 m

Start time: 73-March-14 04.07.30.

Stop time: 73-March-30 18.52.30.

Duration: 16d 14h 45m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

Compass - good

Vane - becomes stuck March 30 to recovery

Rotor - at threshold between April 1 and May 30

Temperature - good

STATS

DATA/ 48518900A

	EAST	NORTH	SPEED	EAST & NORTH	
MEAN	83.18	-2.67	86.33	COVARIANCE	-10.58
STD. ERR.	.86	1.14	.82	STD. ERR. OF COVARIANCE	98.47
VARIANCE	1173.20	2082.02	1075.58	STD. DEV. OF COVARIANCE	3833.75
STD. DEV.	34.25	45.41	32.80	CORRELATION COEFFICIENT	-.007
KURTOSIS	2.58	2.74	2.37	VECTOR MEAN	83.23
SKEWNESS	.20	.62	.08	VECTOR VARIANCE	1817.81
				STD. DEV.	40.22

UNITS OF RAW DATA VARIABLES = MM/SEC

SAMPLE SIZE = 1596 POINTS *** TEMPERATURE ***
*** DEGREES C. ***

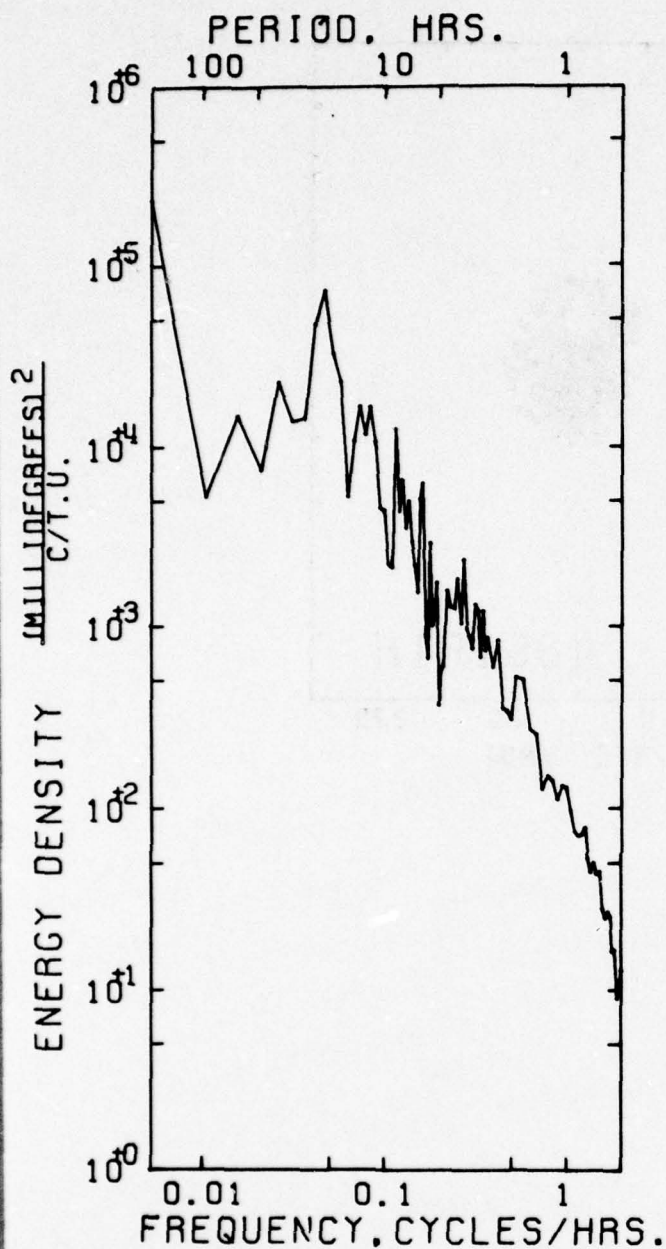
SPANNING RANGE

FROM 73- III-14 04.07.30
TO 73- III-30 18.52.30

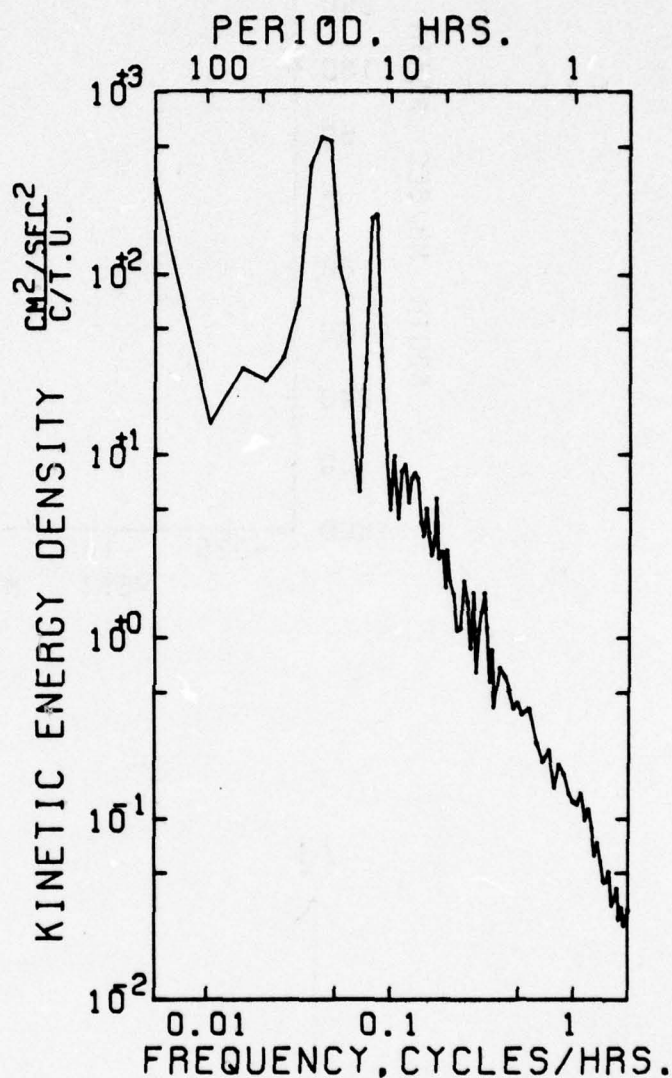
DURATION 16 DAYS 14 H 45 M

MEAN	16.967	STD ERR	.002
VARIANCE	.005		
STD. DEV.	.069		
KURTOSIS	2.547		
SKEWNESS	.292		

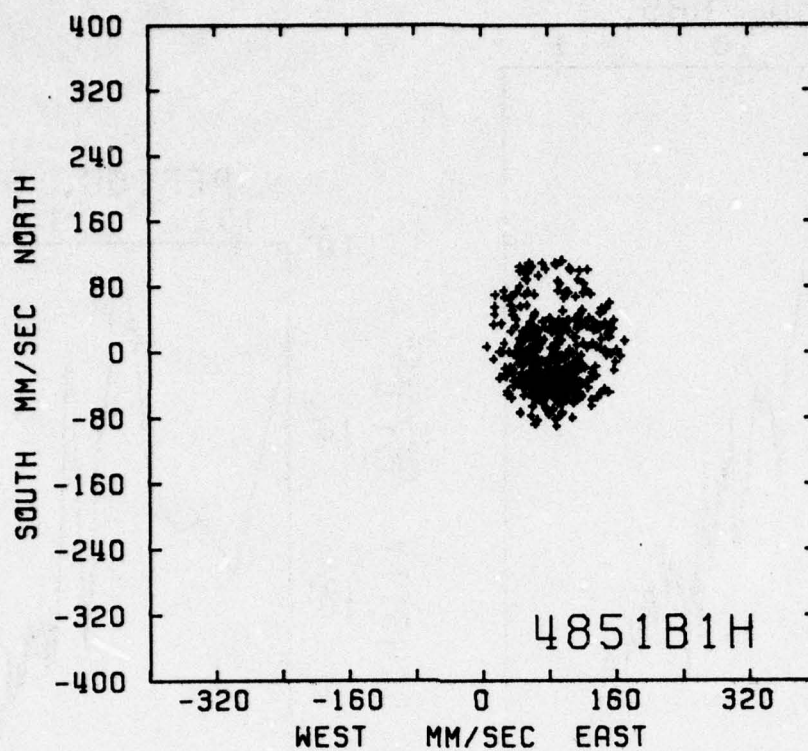
SAMPLE SIZE = 1596 POINTS



AUTO SPECTRUM
48518900 TEMPERATURE
421 METERS
73-III-14 TO 73-III-30
1 PIECES WITH 768 ESTIMATES
PER PIECE. AVERAGED OVER
2 ADJACENT FREQUENCY BANDS



AUTO SPECTRUM
48518900 EAST
48518900 NORTH
421 METERS
73-III-14 TO 73-III-30
1 PIECES WITH 768 ESTIMATES
PER PIECE. AVERAGED OVER
2 ADJACENT FREQUENCY BANDS

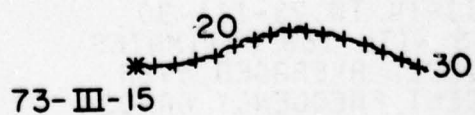


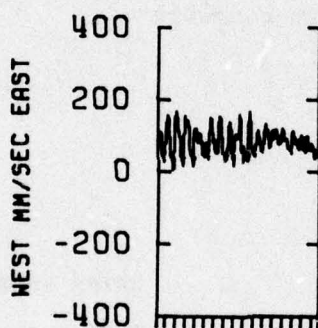
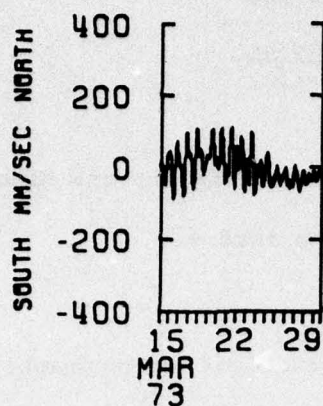
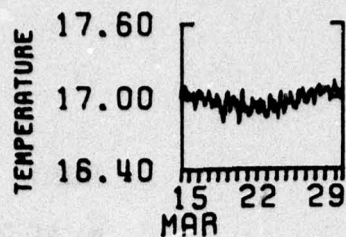
0. 150.
KILOMETERS

4851B900

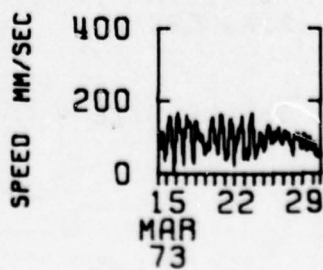
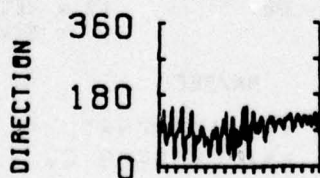
421 M

73- III-15 TO 73- III-30





4851B1H
421 M



AD-A034 671

WOODS HOLE OCEANOGRAPHIC INSTITUTION MASS

F/G 8/3

A COMPILATION OF MOORED CURRENT DATA AND ASSOCIATED OCEANOGRAPH--ETC(U)

NOV 76 D CHAUSSE, S TARBELL

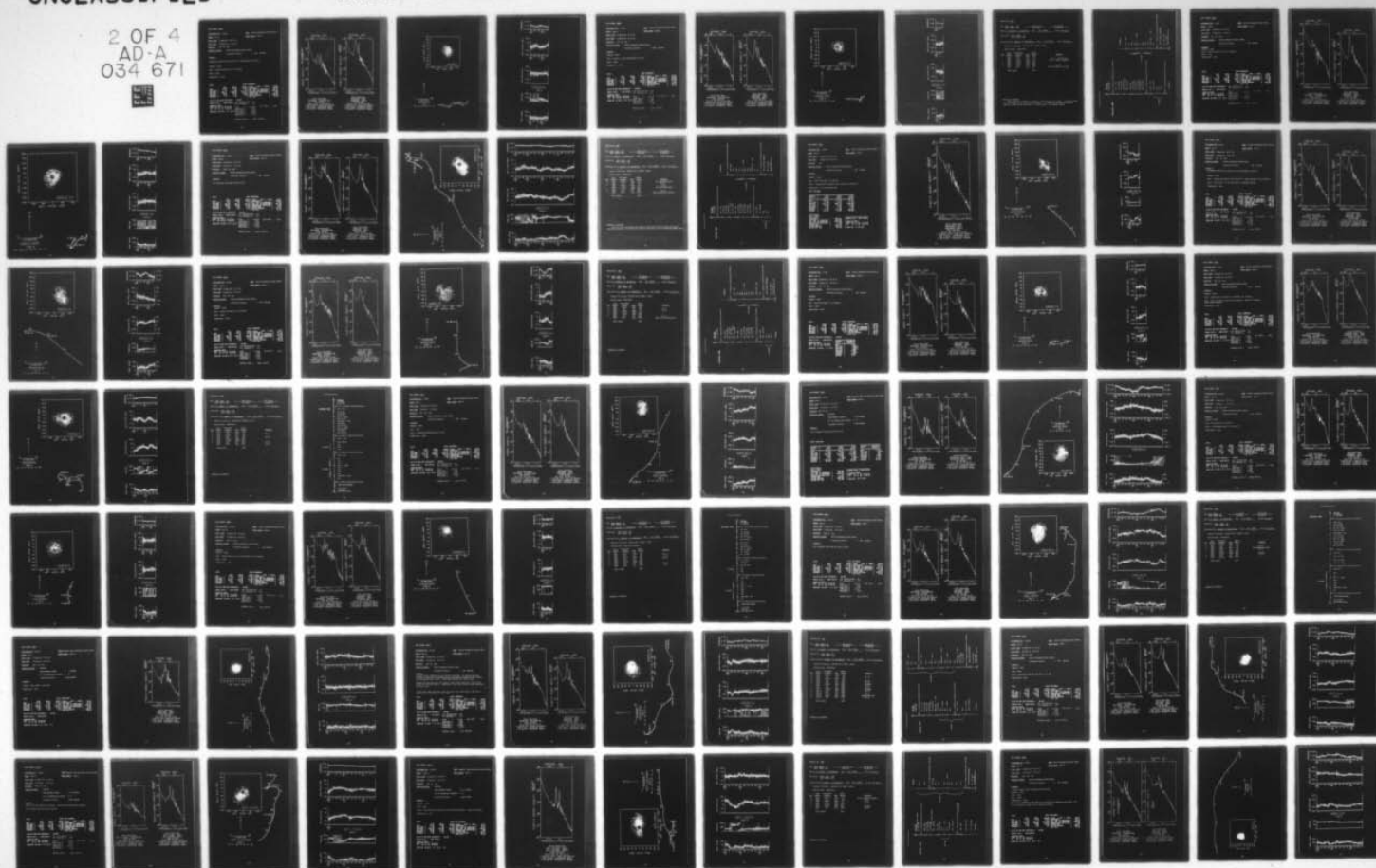
N00014-66-C-0241

UNCLASSIFIED

WHOI-76-101

NL

2 OF 4
AD-A
034 671



DATA NUMBER 4853

Instrument No.: V-0155

Type: Vector Averaging Current Meter

Depth: 723 m

Water Depth: 5420 m

Start time: 73-March-14 04.07.30.

Stop time: 73-April-16 13.52.30.

Duration: 33d 9h 45m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

Instrument owned by the Institute of Oceanographic Sciences

Compass - good

Vane - sticky from April 17 to recovery

Rotor - good

Temperature - good

STATS

DATA/ 48530900A

MEAN	=	EAST	NORTH	SPEED	=	*****	EAST & NORTH	*****
STD. ERR.	=	55.44	13.22	79.21	=	COVARIANCE	=	-203.56
VARIANCE	=	.70	.88	.56	=	STD. ERR. OF COVARIANCE	=	54.19
STD. DEV.	=	1585.11	2482.86	1021.17	=	STD. DEV. OF COVARIANCE	=	3089.06
KURTOSIS	=	38.81	48.83	31.96	=	CORRELATION COEFFICIENT	=	-.103
SKEWNESS	=	3.04	2.71	2.56	=	VECTOR MEAN	=	58.88
		-.17	-.08	.13	=	VECTOR VARIANCE	=	2023.88
					=	STD. DEV.	=	44.88

UNITS OF RAW DATA VARIABLES = MM/SEC

SAMPLE SIZE = 3208 POINTS *** TEMPERATURE ***
*** DEGREES C. ***

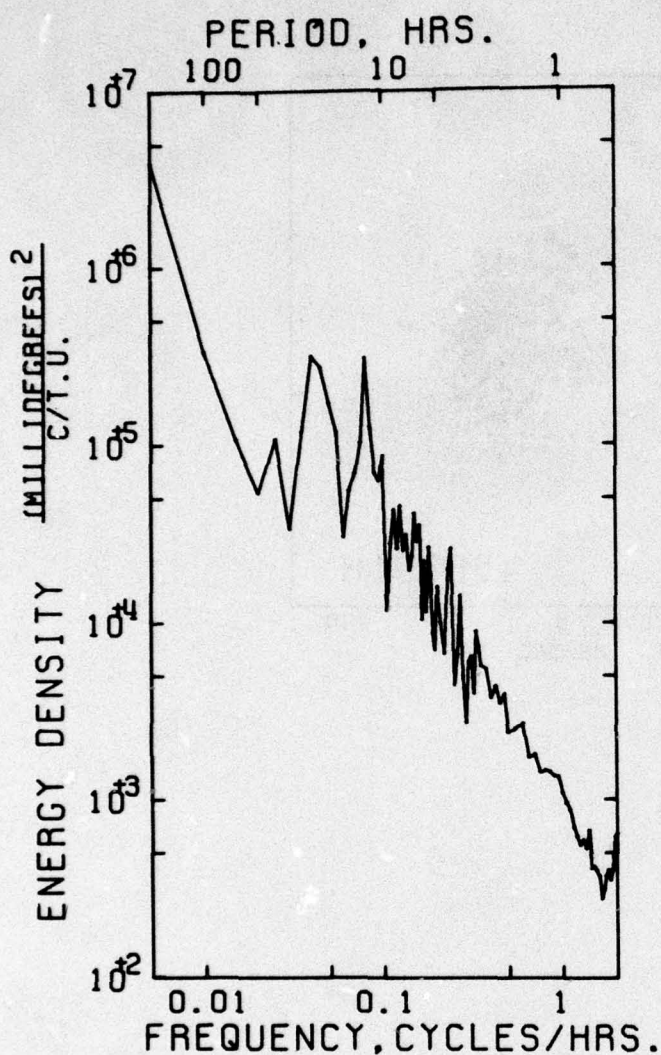
SPANNING RANGE

FROM 73- III-14 04.07.30
TO 73- IV -16 13.52.30

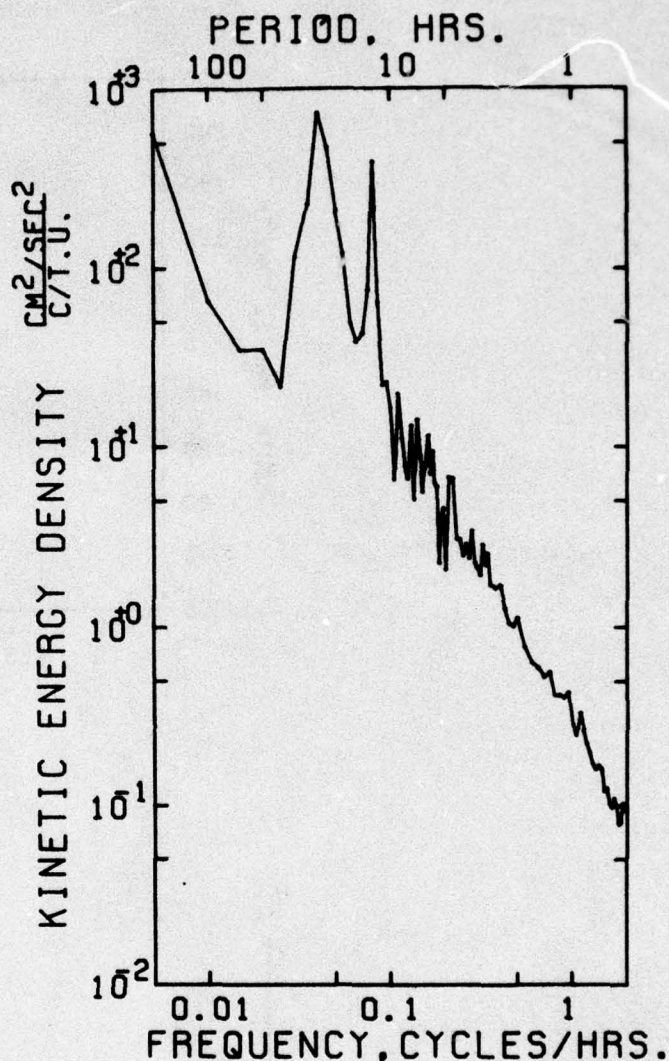
DURATION 33 DAYS 9 H 45 M

MEAN	=	11.331	STD ERR	=	.004
VARIANCE	=	.050			
STD. DEV.	=	.223			
KURTOSIS	=	2.455			
SKEWNESS	=	-.225			

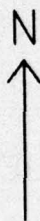
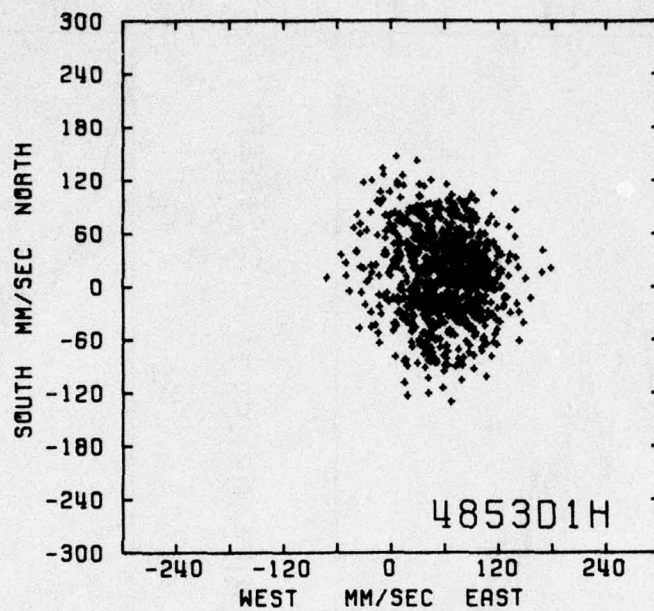
SAMPLE SIZE = 3208 POINTS



AUTO SPECTRUM
48530900 TEMPERATURE
723 METERS
73-III-14 TO 73-IV-16
1 PIECES WITH 1600 ESTIMATES
PER PIECE. AVERAGED OVER
4 ADJACENT FREQUENCY BANDS



AUTO SPECTRUM
48530900 EAST
48530900 NORTH
723 METERS
73-III-14 TO 73-IV-16
1 PIECES WITH 1600 ESTIMATES
PER PIECE. AVERAGED OVER
4 ADJACENT FREQUENCY BANDS

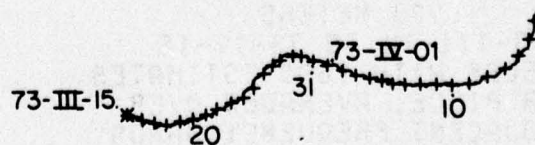


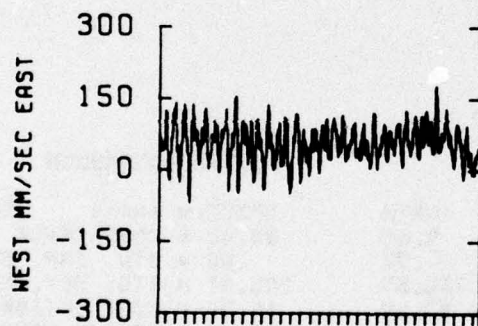
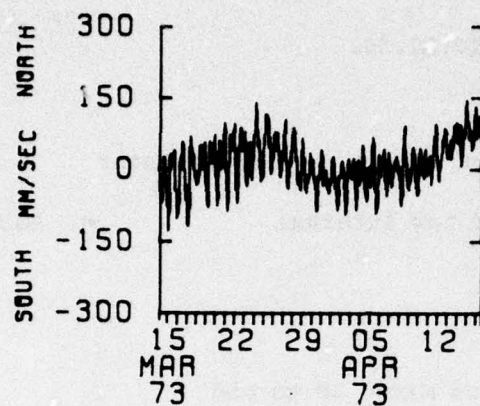
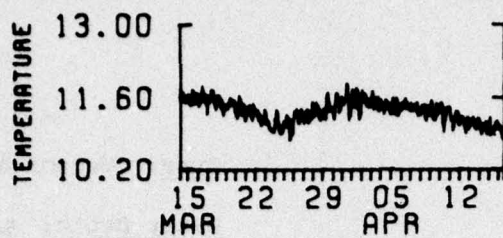
0. 100.
KILOMETERS

4853D900

723 M

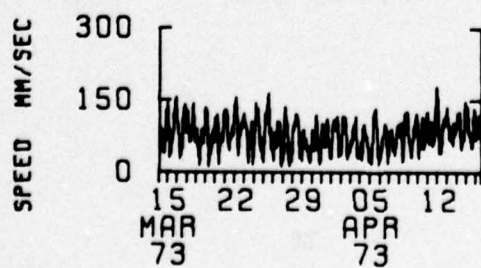
73- III-15 TO 73- IV -16





4853D1H

723 M



DATA NUMBER 4856

Instrument No.: V-0139

Type: Vector Averaging Current Meter

Depth: 1426 m

Water Depth: 5420 m

Start time: 73-March-14 04.07.30.

Stop time: 73-March-28 10.52.30.

Duration: 14d 6h 45m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

Compass - good

Vane - sticky or stuck from March 28 to end

Rotor - good

Temperature - good

STATS

DATA/ 4856C800A

	EAST	NORTH	SPEED	EAST & NORTH	
MEAN	14.27	4.50	38.42	COVARIANCE	-105.22
STD. ERR.	.75	.74	.38	STD. ERR. OF COVARIANCE	22.82
VARIANCE	774.24	780.57	205.61	STD. DEV. OF COVARIANCE	837.99
STD. DEV.	27.83	27.58	14.34	CORRELATION COEFFICIENT	-.137
KURTOSIS	2.67	2.28	3.14	VECTOR MEAN	15.00
SKEWNESS	-.47	.10	.87	VECTOR VARIANCE	787.41
				STD. DEV.	27.70

UNITS OF RAW DATA VARIABLES = MM/SEC

SAMPLE SIZE = 1372 POINTS *** TEMPERATURE ***
*** DEGREES C. ***

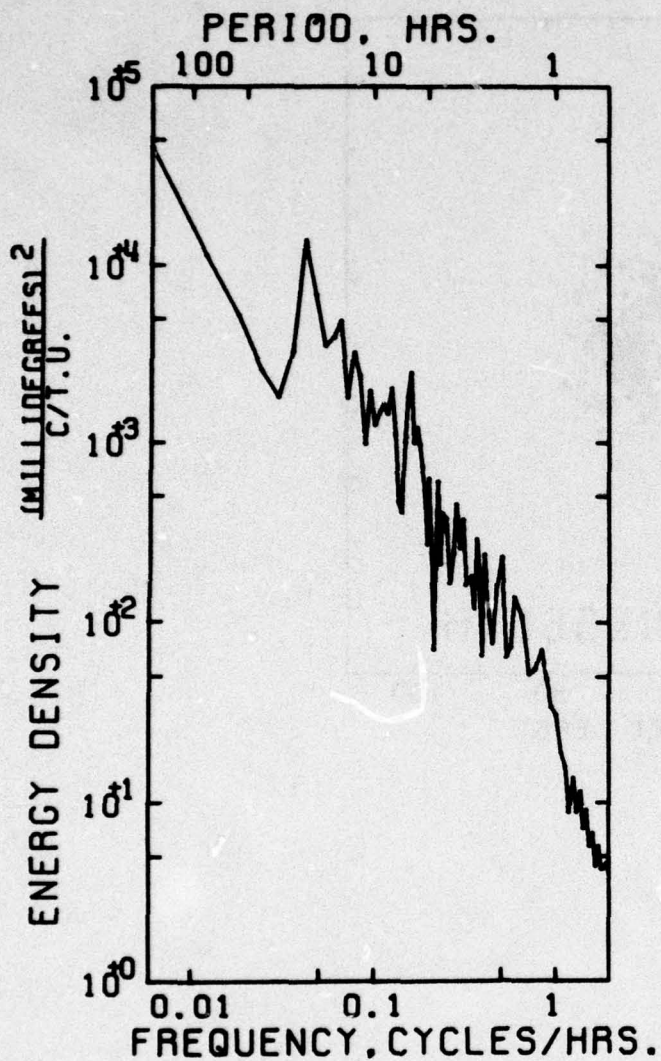
SPANNING RANGE

FROM 73- III-14 04.07.30
TO 73- III-28 10.52.30

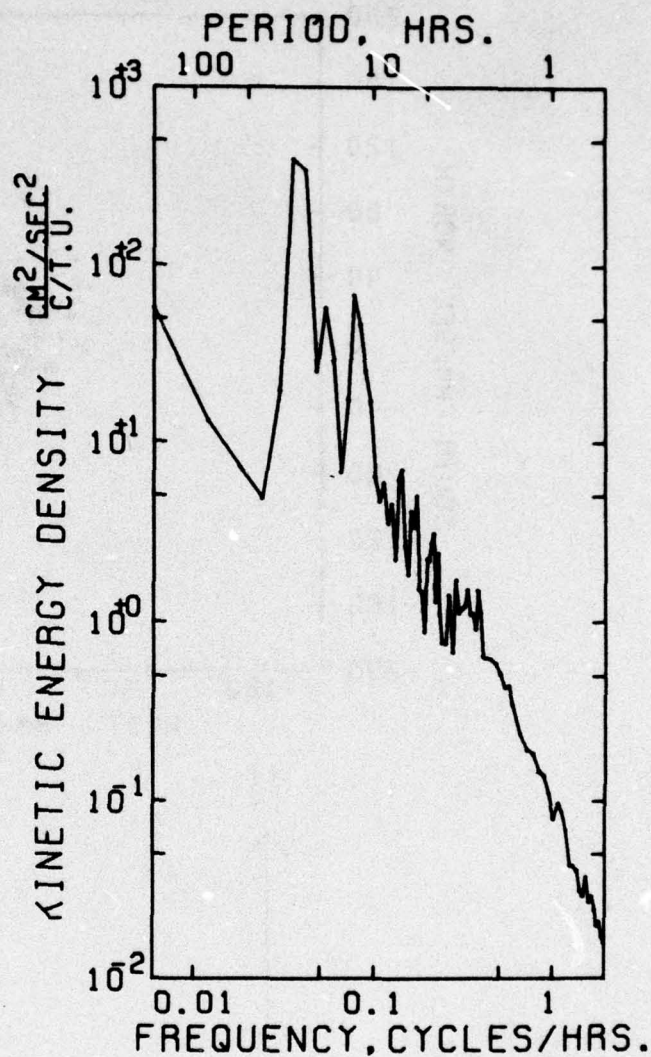
DURATION 14 DAYS 6 H 45 M

MEAN	=	4.503	STD ERR	=	.001
VARIANCE	=	.001			
STD. DEV.	=	.025			
KURTOSIS	=	3.034			
SKEWNESS	=	.028			

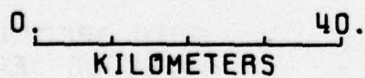
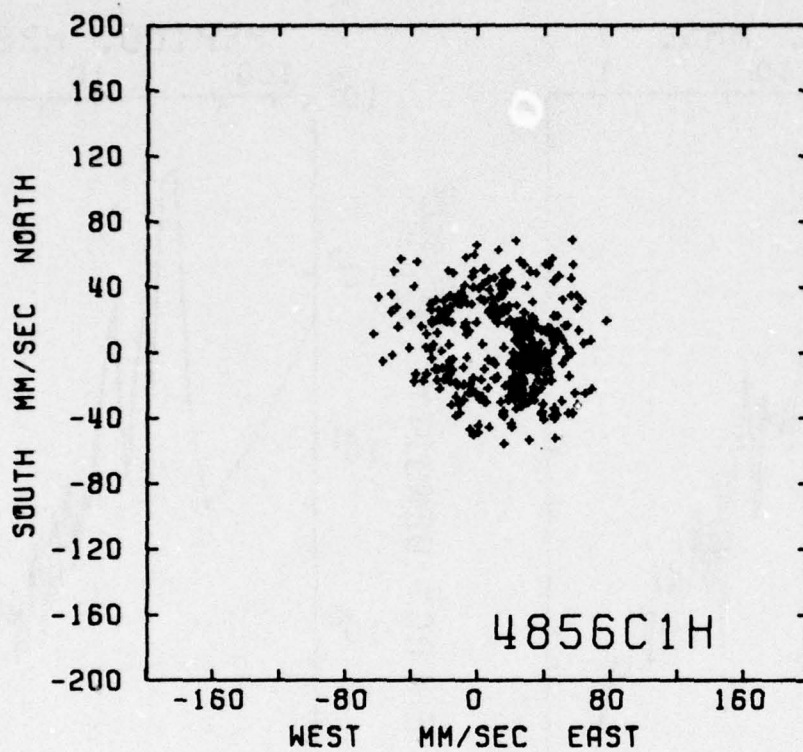
SAMPLE SIZE = 1372 POINTS



AUTO SPECTRUM
4856C900 TEMPERATURE
1426 METERS
73-III-14 TO 73-III-28
1 PIECES WITH 675 ESTIMATES
PER PIECE. AVERAGED OVER
2 ADJACENT FREQUENCY BANDS



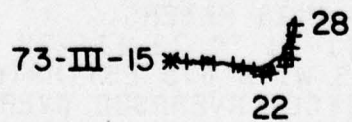
AUTO SPECTRUM
4856C900 EAST
4856C900 NORTH
1426 METERS
73-III-14 TO 73-III-28
1 PIECES WITH 675 ESTIMATES
PER PIECE. AVERAGED OVER
2 ADJACENT FREQUENCY BANDS

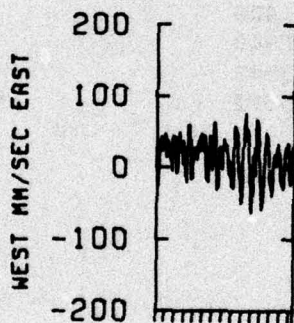
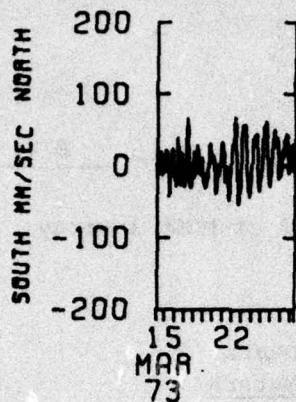
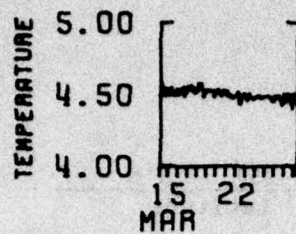


4856C900

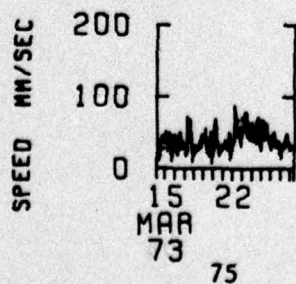
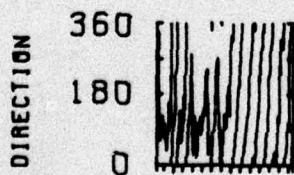
1426 M

73- III-15 TO 73- III-28





4856C1H
1426 M



Mooring No. 486

Set 1973 Mar 14 26° 57.5'N 71° 02.6'W
Year Month Day Latitude Longitude

Set by J. Gifford - R. Heinmiller Ship R.V. CHAIN Cruise 112 Leg 1

Retrieved 1973 July 2
Year Month Day

Retrieved by G. Tupper - R. Heinmiller Ship R.V. CHAIN Cruise 112 Leg 6

Purpose of Mooring: Mooring #12 of MODE 1 array

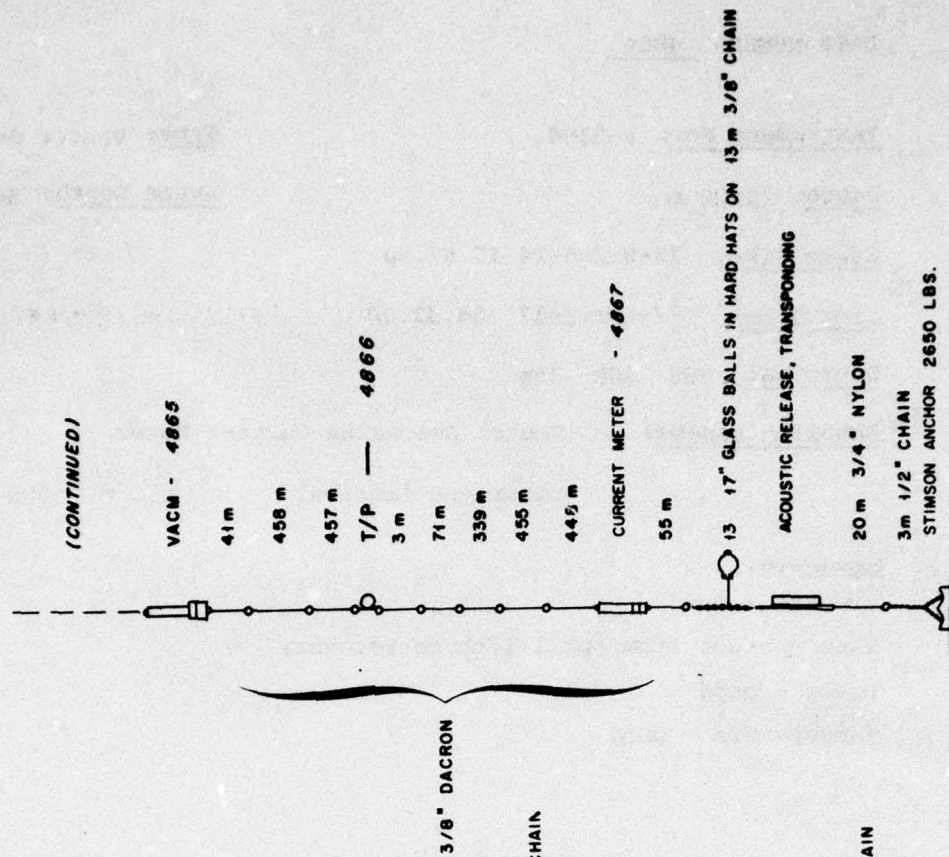
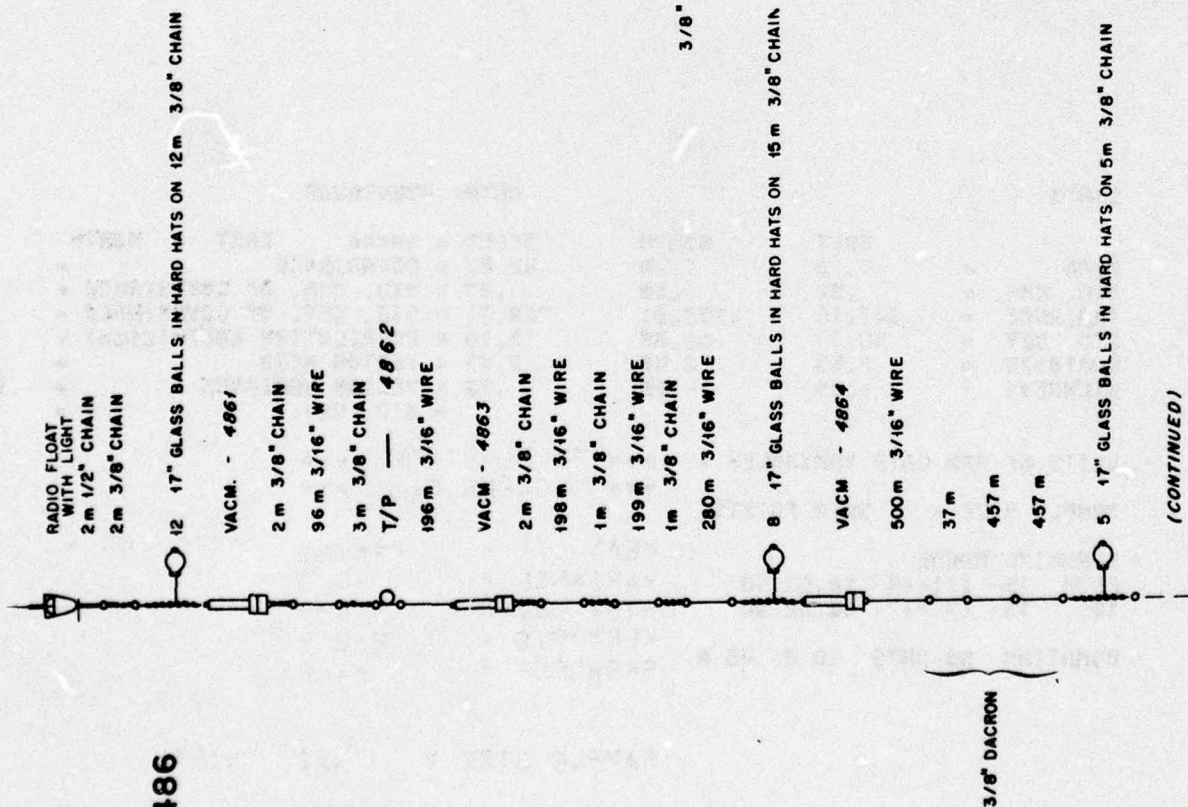
Mooring Type: Subsurface

<u>Key</u>	<u>Data</u> <u>Number</u>	<u>Instrument</u> <u>Number</u>	<u>Type</u>	<u>Depth</u> <u>Meters</u>	<u>Comments</u>
	4861	V-0131	VACM	415	
	4862	#40	T/P	519	M.I.T., tape fouled
	4863	V-0172	VACM	715	U.R.I., tape unreadable
*	4864	V-0124	VACM	1420	
*	4865	V-0106	VACM	2940	
#	4866	#28	T/P	3948	M.I.T.
	4867	H-877	Film	5372	Nova University, Florida
	Water depth			5474	

COMMENTS ON MOORING:

MODE cameraman overboard in Zodiac to take pictures of a launch. A tanker passed 2.3 miles astern of us during tow of mooring. It crossed the mooring line between item 20 (8 glass balls) and item 26 (5 glass balls). No apparent damage.

STATION 486



DATA NUMBER 4864

Instrument No.: V-0184

Type: Vector Averaging Current Meter

Depth: 1420 m

Water Depth: 5474 m

Start Time: 73-March-14 15.07.30

Stop Time: 73-April-17 05.52.30

Duration: 33d 10h 45m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

Compass - good

Vane - stuck from April 17th to recovery

Rotor - good

Temperature - good

STATS

DATA/ 4864C900A

	EAST	NORTH	SPEED	EAST & NORTH	
MEAN	7.13	1.78	42.87	COVARIANCE	126.21
STD. ERR.	.54	.58	.27	STD. ERR. OF COVARIANCE	14.80
VARIANCE	947.10	1088.51	228.71	STD. DEV. OF COVARIANCE	844.18
STD. DEV.	30.77	32.86	15.16	CORRELATION COEFFICIENT	.128
KURTOSIS	2.43	2.43	2.67	VECTOR MEAN	7.35
SKEWNESS	-.33	-.25	.58	VECTOR VARIANCE	1008.80
				STD. DEV.	31.73

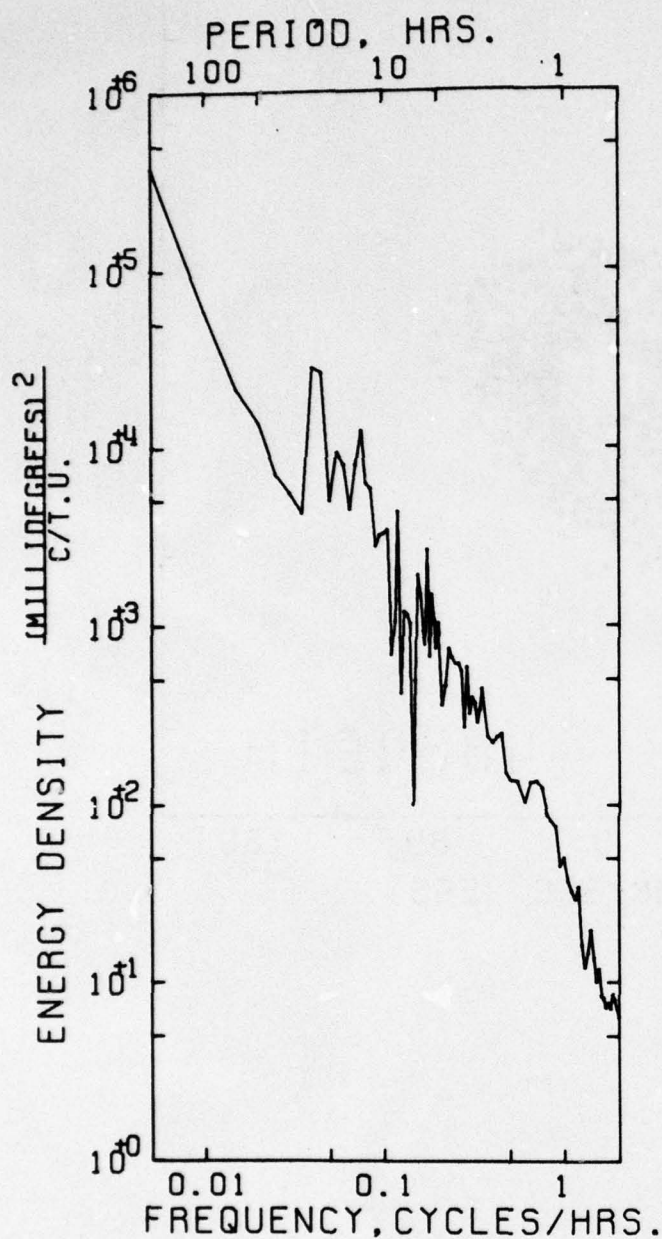
UNITS OF RAW DATA VARIABLES = *** TEMPERATURE ***

*** DEGREES C. ***

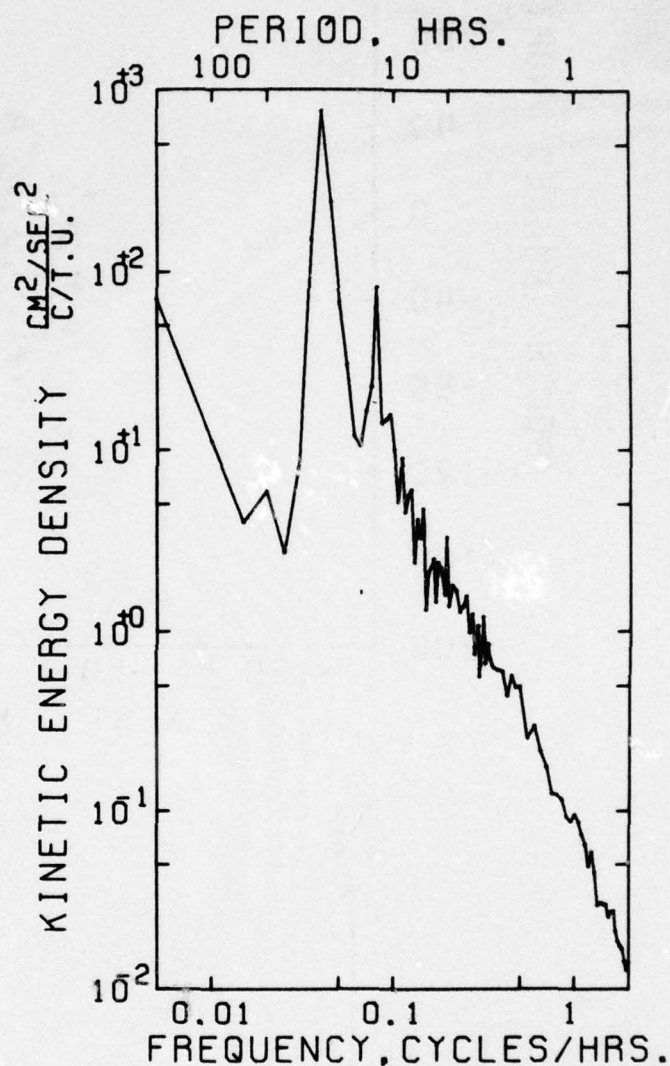
SAMPLE SIZE = 3212 POINTS

SPANNING RANGE	MEAN	4.718	STD. ERR.	.008
FROM 73- III-14 15.07.30	VARIANCE	.008		
TO 73- IV -17 05.52.30	STD. DEV.	.028		
DURATION 33 DAYS 10 H 45 M	KURTOSIS	2.214		
	SKEWNESS	-.224		

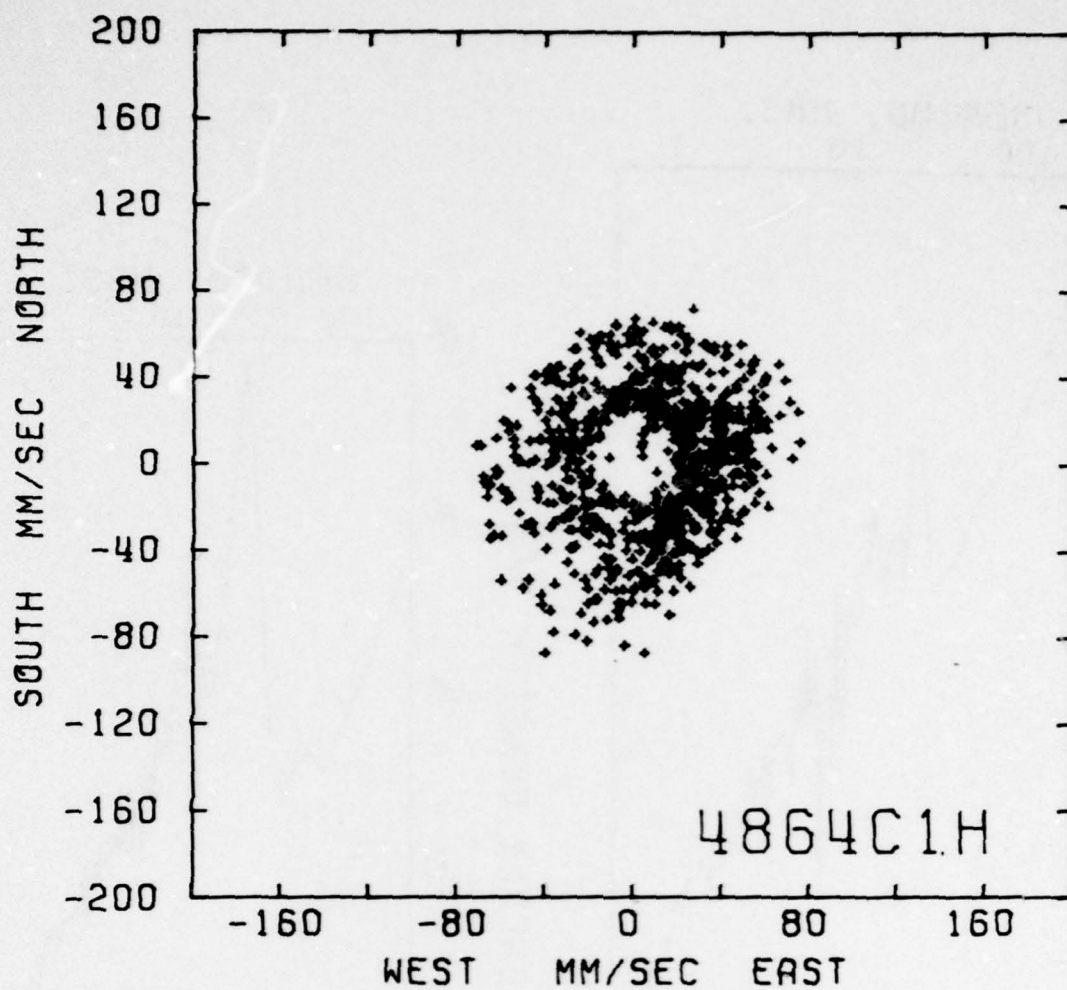
SAMPLE SIZE = 3212 POINTS



AUTO SPECTRUM
4864C900 TEMPERATURE
1420 METERS
73-III-15 TO 73-IV-17
1 PIECES WITH 1600 ESTIMATES
PER PIECE. AVERAGED OVER
4 ADJACENT FREQUENCY BANDS



AUTO SPECTRUM
4864C900 EAST
4864C900 NORTH
1420 METERS
73-III-14 TO 73-IV-17
1 PIECES WITH 1600 ESTIMATES
PER PIECE. AVERAGED OVER
4 ADJACENT FREQUENCY BANDS

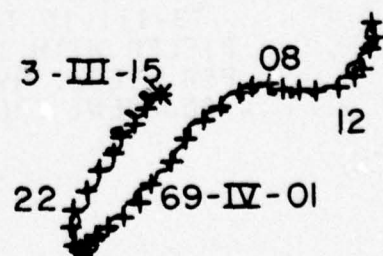


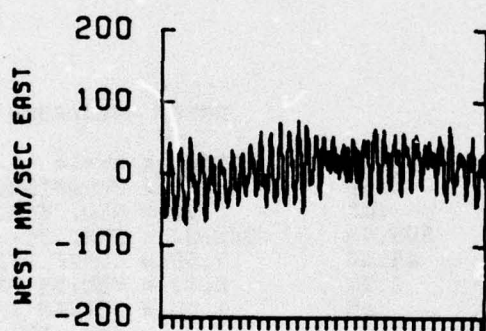
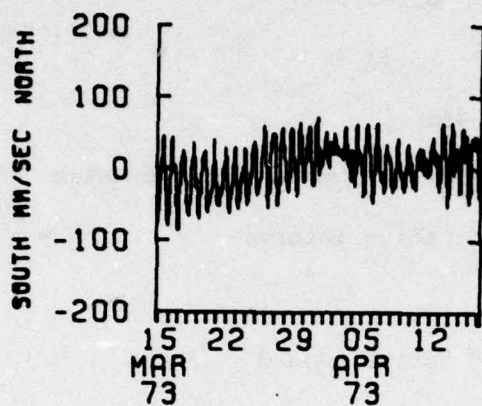
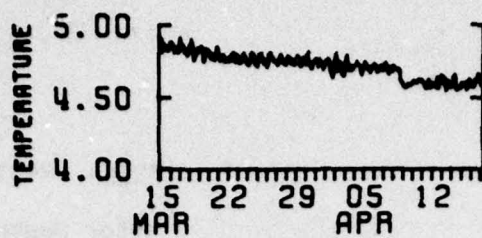
0. 40.
KILOMETERS

4864C900

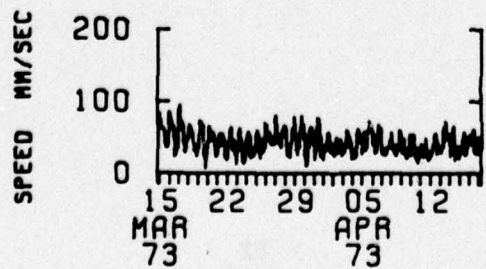
1420 M

73- III-15 TO 73- IV -17





4864C1H
1420 M



DATA NUMBER 4865

Instrument No.: V-0106

Type: Vector Averaging Current Meter

Depth: 2940 m

Water Depth: 5474 m

Start time: 73-March-15 07.07.30.

Stop time: 73-July-01 23.52.30.

Duration: 108d 16h 45m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

All variables look good entire record

STATS

DATA/ 4865C900A

MEAN	=	EAST	NORTH	SPEED	=	*****	EAST & NORTH	*****
STD. ERR.	=	-14.67	-12.66	39.13	=	COVARIANCE	=	320.42
VARIANCE	=	.29	.24	.17	=	STD. ERR. OF COVARIANCE	=	0.05
STD. DEV.	=	088.94	595.44	308.97	=	STD. DEV. OF COVARIANCE	=	821.00
KURTOSIS	=	28.44	24.40	17.52	=	CORRELATION COEFFICIENT	=	.457
SKEWNESS	=	2.56	2.84	9.37	=	VECTOR MEAN	=	19.30
	=	-.05	.45	1.00	=	VECTOR VARIANCE	=	791.19
					=	STD. DEV.	=	27.04

UNITS OF RAW DATA VARIABLES = MM/SEC

SAMPLE SIZE = 10436 POINTS

*** TEMPERATURE ***

*** DEGREES C. ***

SPANNING RANGE

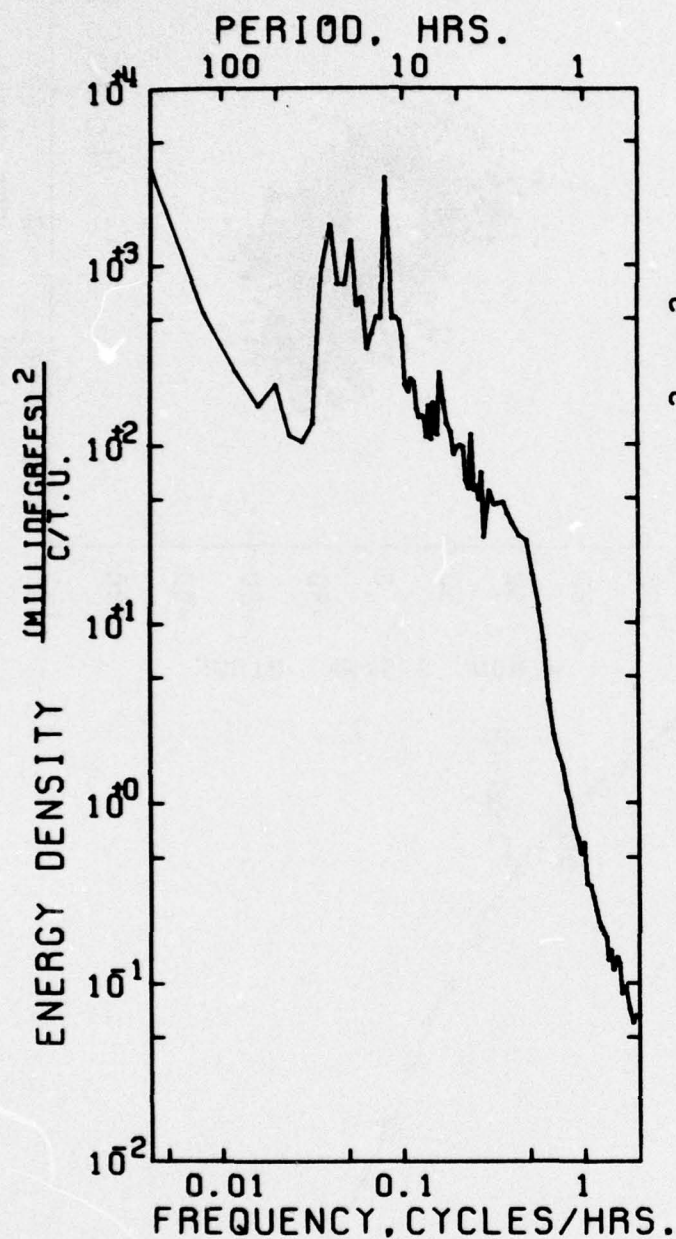
FROM 73- III-15 07.07.30

TO 73- VII-01 23.52.30

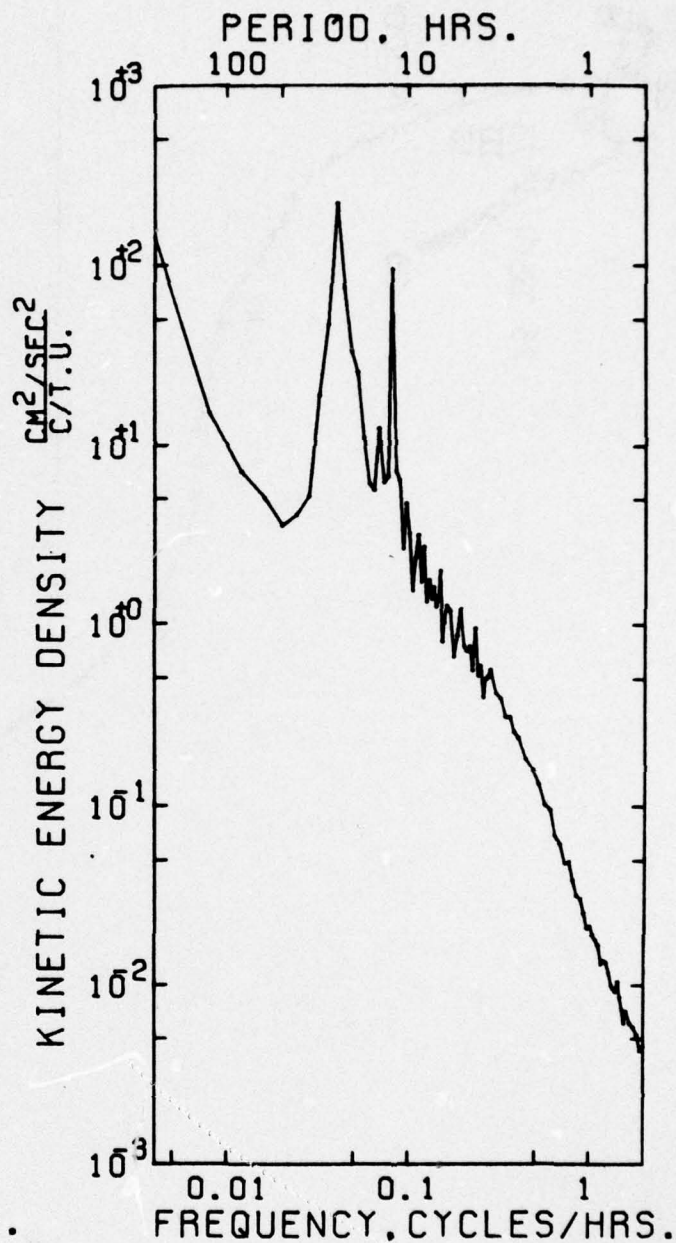
DURATION 108 DAYS 16 H 45 M

MEAN	=	2.799	STD ERR	=	.000
VARIANCE	=	.000			
STD. DEV.	=	.016			
KURTOSIS	=	2.528			
SKEWNESS	=	-.107			

SAMPLE SIZE = 10436 POINTS



AUTO SPECTRUM
 4865C900 TEMPERATURE
 2940 METERS
 73-III-15 TO 73-VI-06
 1 PIECES WITH 4000 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS



AUTO SPECTRUM
 4865C900 EAST
 4865C900 NORTH
 2940 METERS
 73-III-15 TO 73-VI-06
 1 PIECES WITH 4000 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS

N

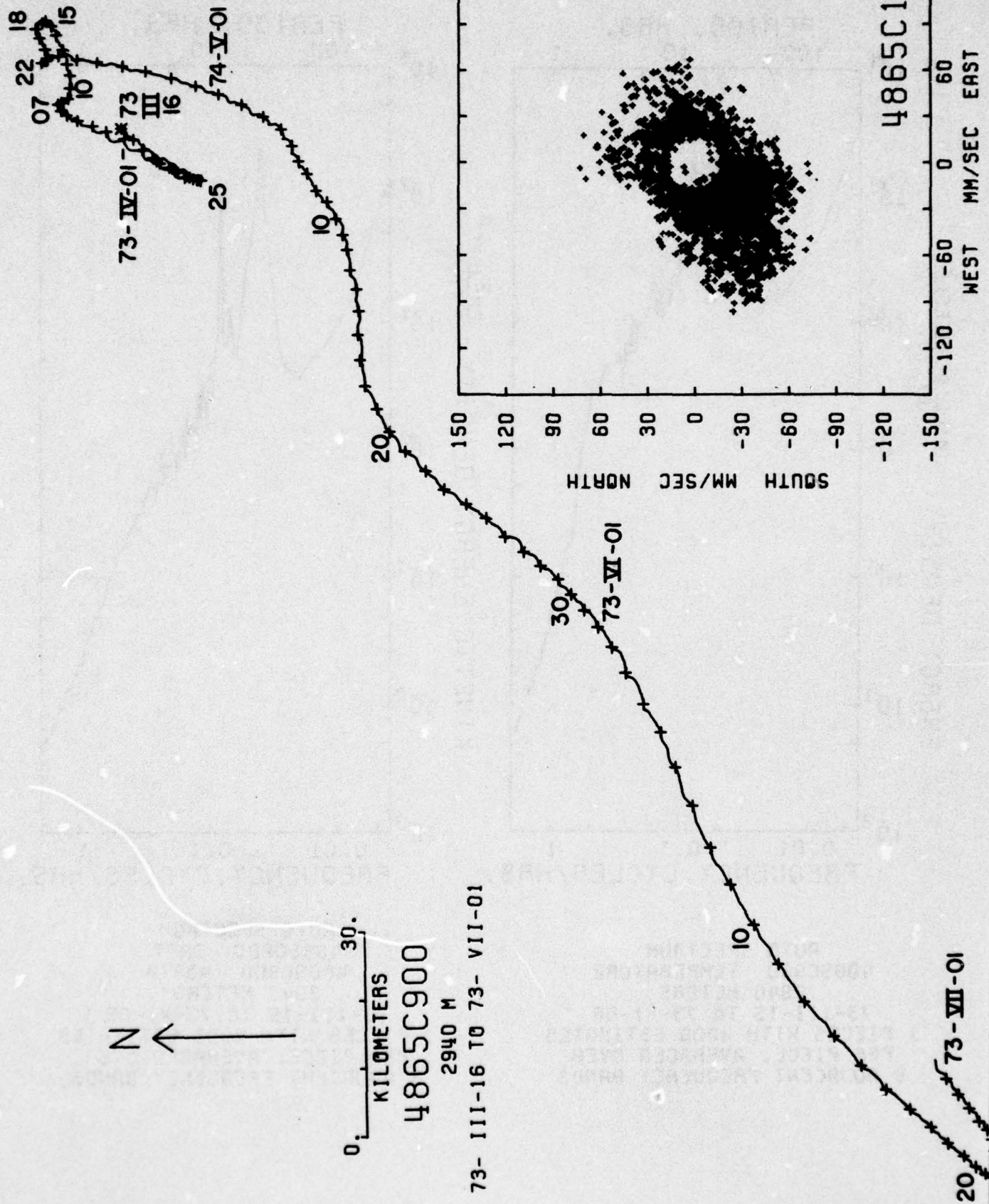
0 30
KILOMETERS

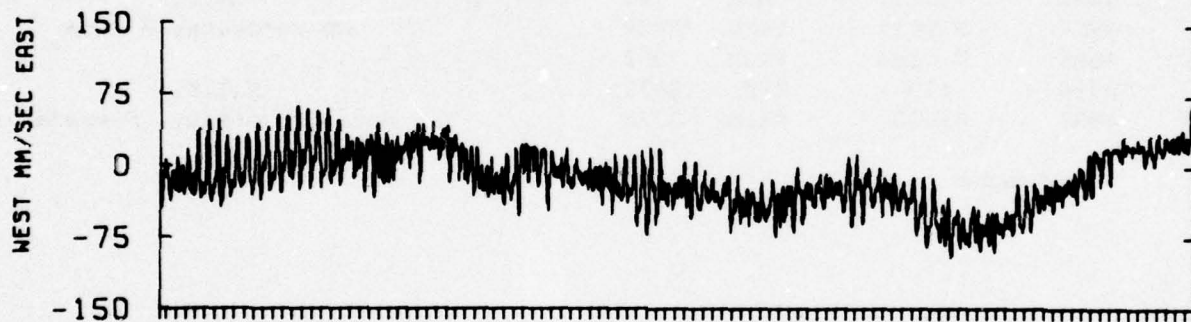
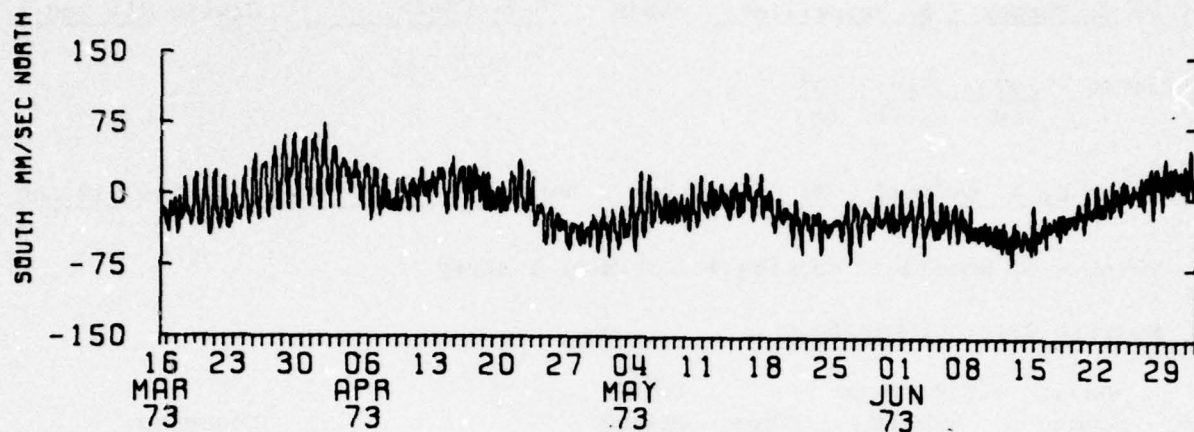
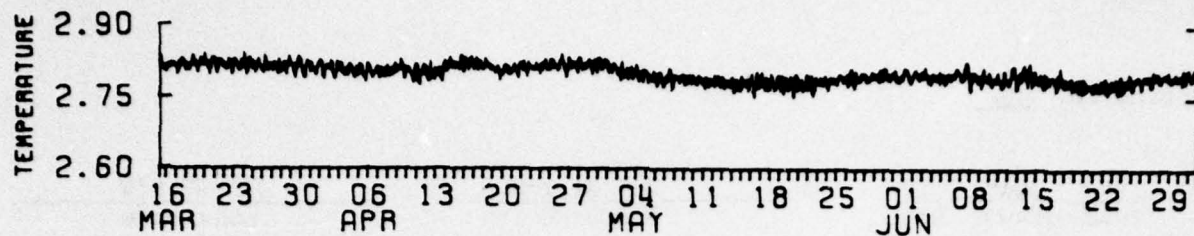
4865C900

2940 M

73- III-16 TO 73- VII-01

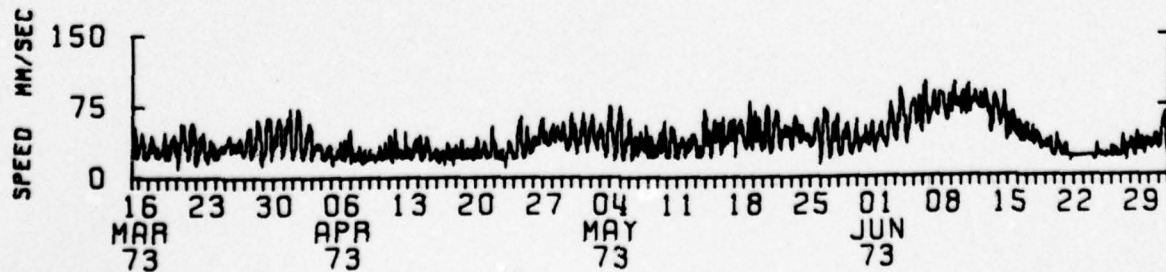
84





4865C1H

2940 M



Mooring No. 488

Set 1973 Mar 15 28° 31.1'N 71° 22.9'W
Year Month Day Latitude Longitude

Set by G. Tupper - R. Heinmiller Ship R.V. CHAIN Cruise 112 Leg 1

Retrieved 1973 July 01
Year Month Day

Retrieved by J. Gifford - R. Heinmiller Ship R.V. CHAIN Cruise 112 Leg 6

Purpose of Mooring: Mooring #13 of MODE 1 array

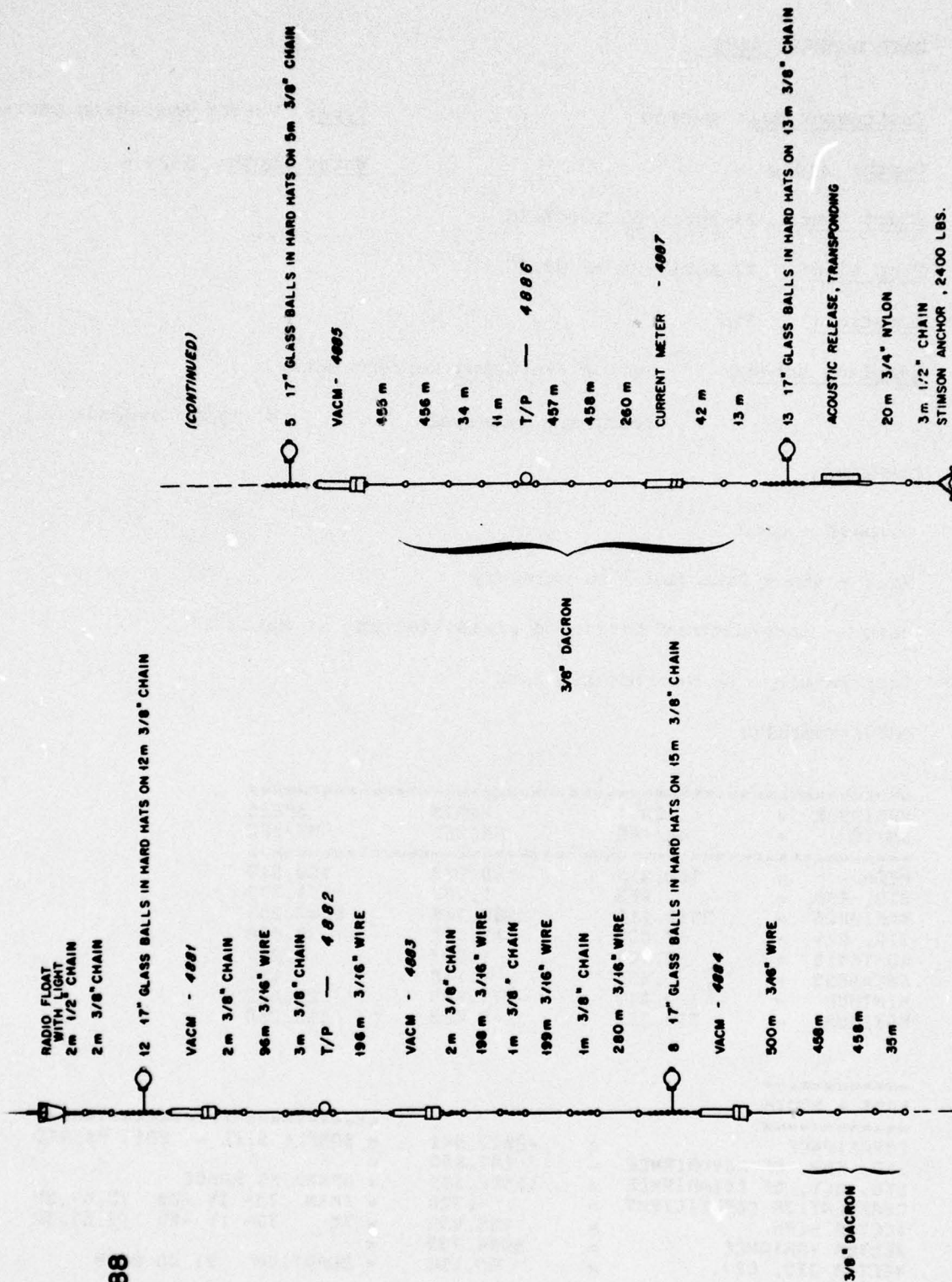
Mooring Type: Subsurface

Key	Data Number	Instrument Number	Type	Depth Meters	Comments
*	4881	V-0109	VACM	419	No temperature data
#	4882	#41	T/P	521	M.I.T.
*	4883	V-0132	VACM	719	I.O.S.
	4884	V-0137	VACM	1429	No recoverable data
*	4885	V-0183	VACM	2952	
#	4886	#29	T/P	3972	M.I.T.
	4887	H-302	Film	5226	Nova University, Florida
	Water depth			5325	

COMMENTS ON MOORING:

The 3/4" nylon just below the release on mooring 487 parted before the anchor reached the bottom. The mooring was retrieved and reset with a new mooring number (488).

STATION 488



DATA NUMBER 4881

Instrument No.: V-0109

Type: Vector Averaging Current Meter

Depth: 419 m

Water Depth: 5325 m

Start time: 73-April-03 12.07.30

Stop time: 73-April-24 12.07.30

Duration: 21d

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

Compass - good

Vane - stuck from May 7 to recovery

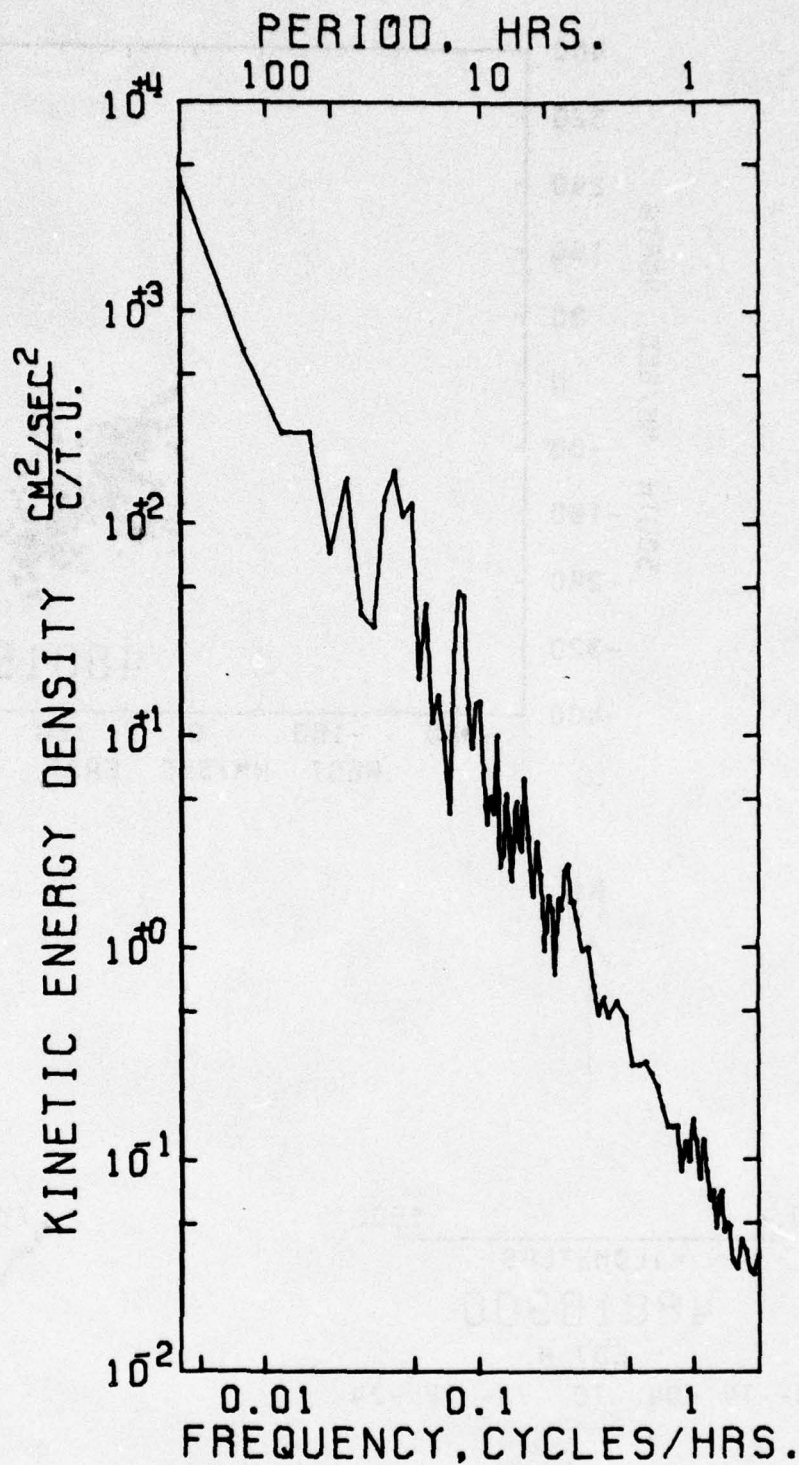
Rotor - intermittent threshold areas starting at March 27

Temperature - no recoverable data

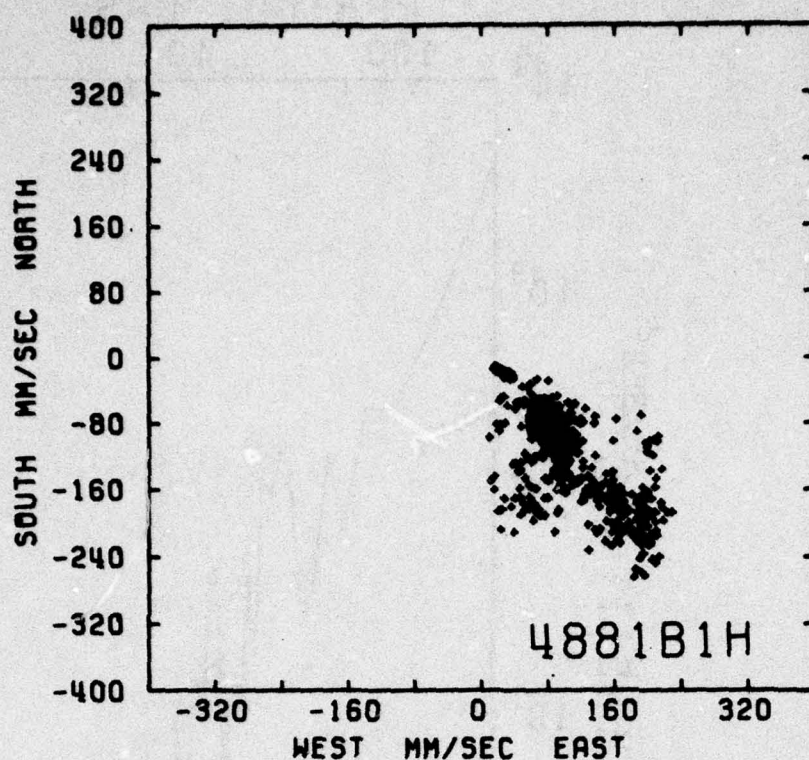
DATA/ 48818900

```
=====
VARIABLE  "      EAST      NORTH      SPEED
UNITS      "      MM/SEC      MM/SEC      MM/SEC
=====
MEAN        "      102.418      -116.913      158.517
STD. ERR.   "          1.289          1.407          1.773
VARIANCE    "      3318.718      3990.748      6340.295
STD. DEV.   "      57.608        63.172        79.626
KURTOSIS    "          2.127          1.997          2.090
SKEWNESS    "          .435          -.110          .151
MINIMUM     "          7.017      -271.890        20.000
MAXIMUM     "      234.222        -9.428        333.000
=====
```

```
=====
EAST & NORTH
=====
COVARIANCE      "      -2620.941      " SAMPLE SIZE = 2017 POINTS
STD. ERR. OF COVARIANCE "      297.980      "
STD. DEV. OF COVARIANCE "      15982.589      " SPANNING RANGE
CORRELATION COEFFICIENT "      -.720      " FROM 73- IV -03 12.07.30
VECTOR MEAN      "      155.430      " TO 73- IV -24 12.07.30
VECTOR VARIANCE  "      3654.733      "
VECTOR STD. DEV. "      60.454      " DURATION 21.00 DAYS
=====
```



AUTO SPECTRUM
4881B900 EAST
4881B900 NORTH
507 METERS
73-IV-03 TO 73-IV-24
1 PIECES WITH 1000 ESTIMATES
PER PIECE. AVERAGED OVER
2 ADJACENT FREQUENCY BANDS

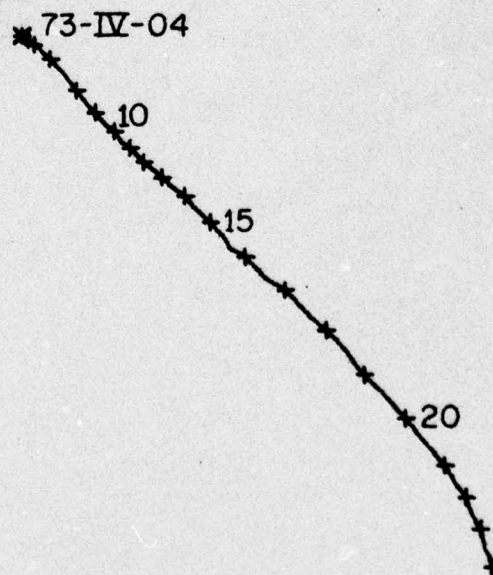


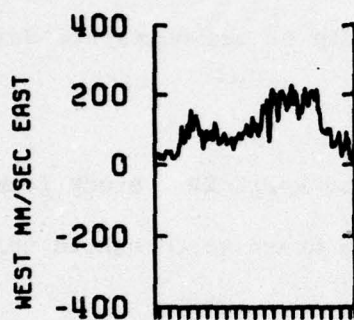
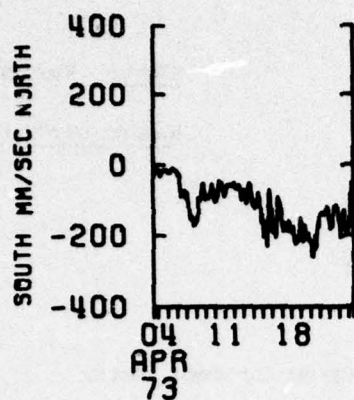
0 150.
KILOMETERS

4881B900

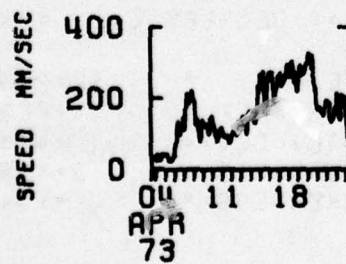
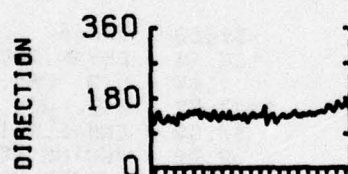
507 M

73- IV -04 TO 73- IV -24





4881B1H
507 M



DATA NUMBER 4883

Instrument No.: V-0132

Type: Vector Averaging Current Meter

Depth: 719 m

Water Depth: 5325 m

Start time: 73-March-15 18.07.30.

Stop time: 73-April-17 11.52.30.

Duration: 32d 17h 45m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

Instrument owned by the Institute of Oceanographic Sciences

Compass - good

Vane - sticking from April 17 to April 22. Stuck from May 10 to recovery

Rotor - good until June 26 then drops to threshold values

Temperature - good

STATS

DATA/ 4883C900A

	EAST	NORTH	SPEED	EAST & NORTH	
MEAN	104.99	-62.49	134.64		-1087.35
STD. ERR.	.86	1.00	.94		150.50
VARIANCE	2329.07	3857.89	2807.58		8438.80
STD. DEV.	48.20	60.48	52.99		91.86
KURTOSIS	2.54	2.55	2.22		122.18
SKEWNESS	-.13	.32	.12		2890.48
				STD. DEV.	54.68

UNITS OF RAW DATA VARIABLES = MM/SEC

SAMPLE SIZE = 3144 POINTS

*** TEMPERATURE ***
*** DEGREES C. ***

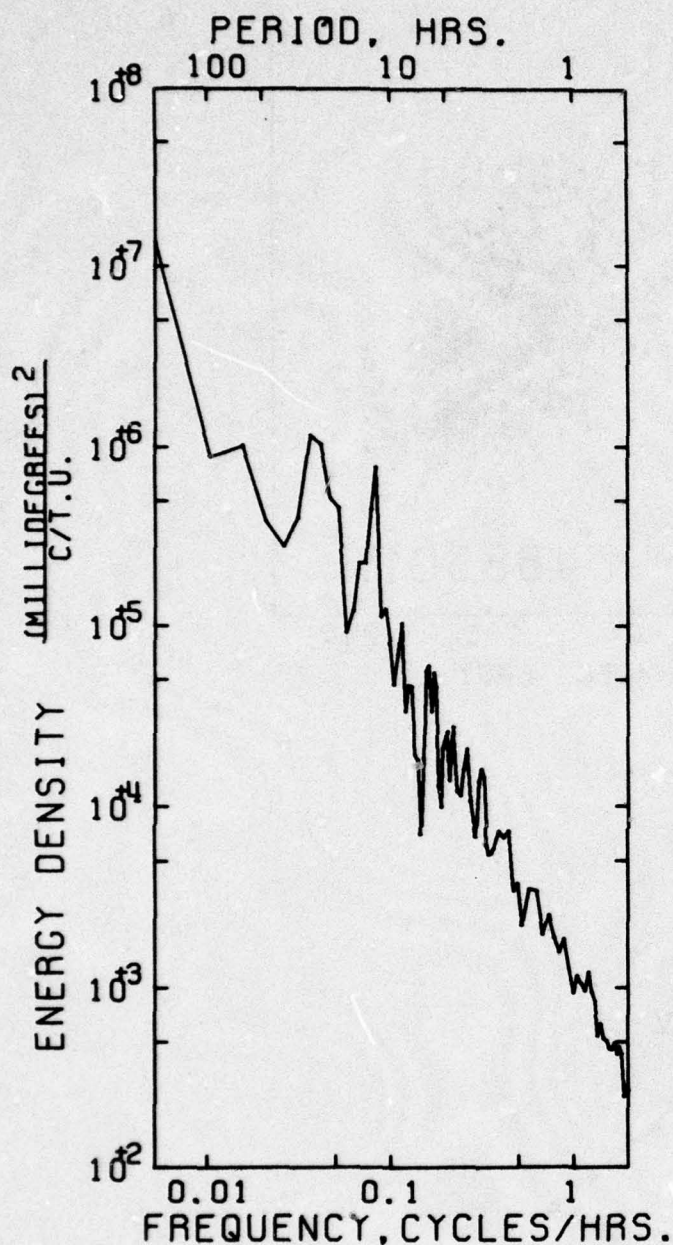
SPANNING RANGE

FROM 73- III-15 18.07.30
TO 73- IV -17 11.52.30

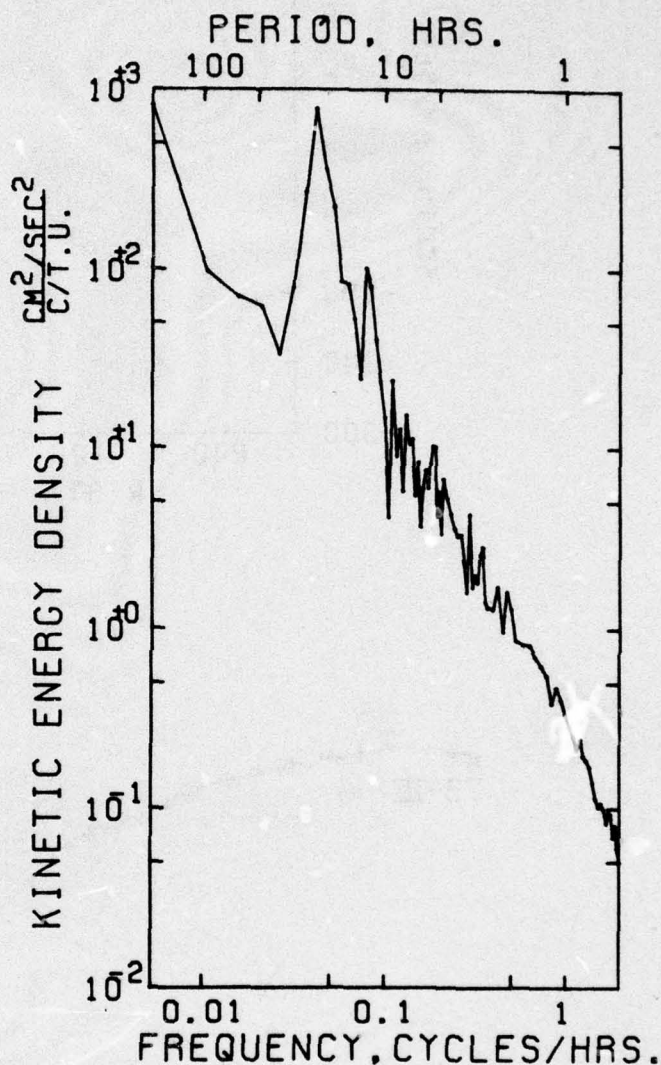
DURATION 32 DAYS 17 H 45 M

MEAN	12.273	STD ERR	.009
VARIANCE	.228		
STD. DEV.	.478		
KURTOSIS	2.415		
SKEWNESS	-.345		

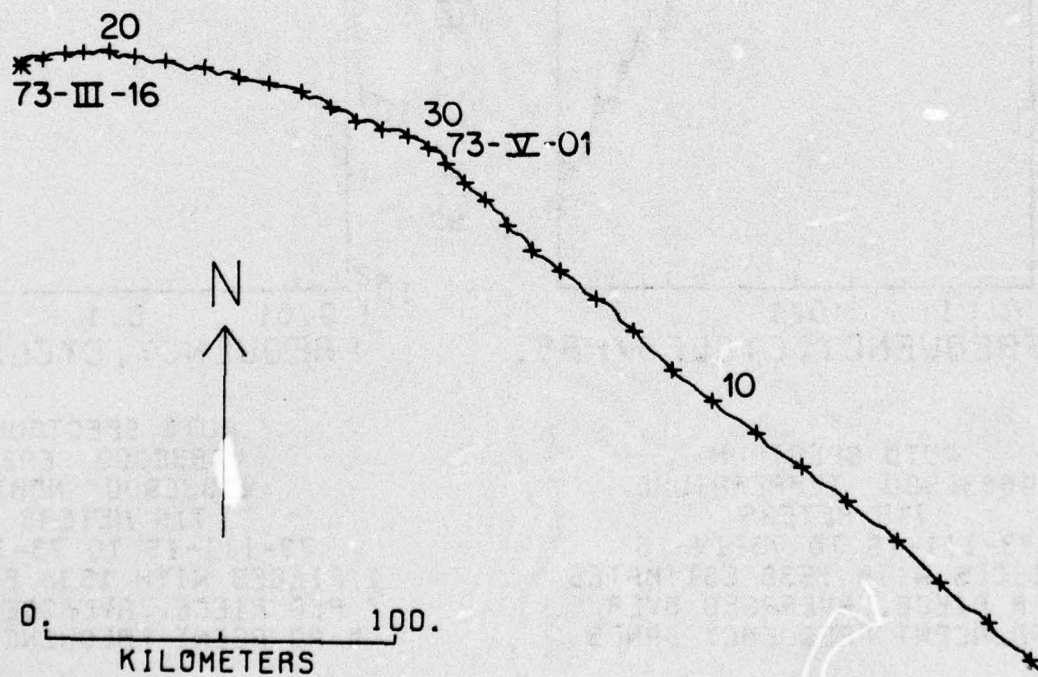
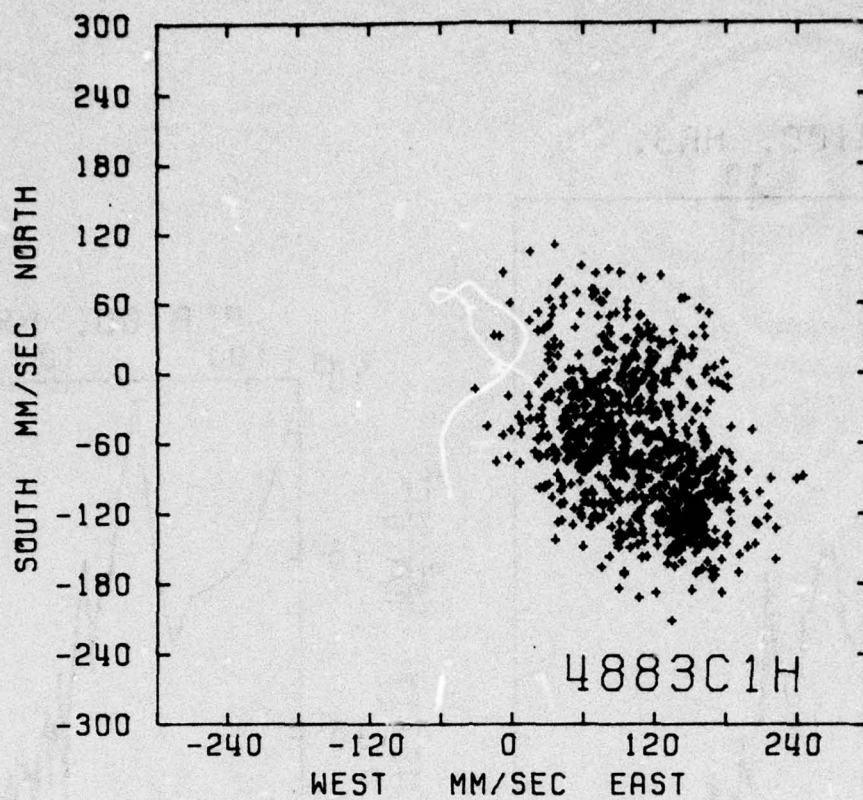
SAMPLE SIZE = 3144 POINTS



AUTO SPECTRUM
4883C900 TEMPERATURE
719 METERS
73-III-15 TO 73-IV-16
1 PIECES WITH 1536 ESTIMATES
PER PIECE. AVERAGED OVER
4 ADJACENT FREQUENCY BANDS



AUTO SPECTRUM
4883C900 EAST
4883C900 NORTH
719 METERS
73-III-15 TO 73-IV-16
1 PIECES WITH 1536 ESTIMATES
PER PIECE. AVERAGED OVER
4 ADJACENT FREQUENCY BANDS

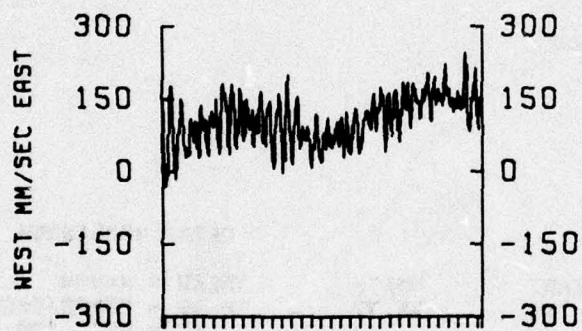
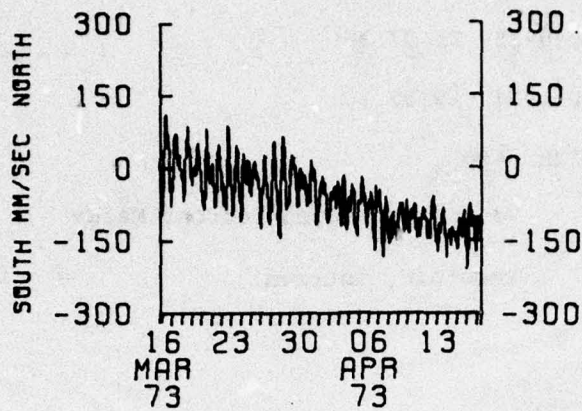
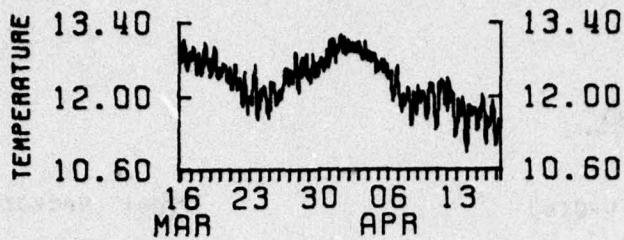


0. 100.
KILOMETERS

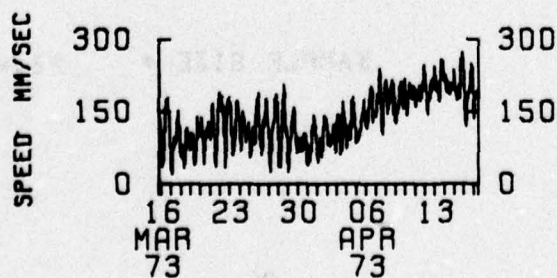
4883C900

719 M

73- III-16 TO 73- IV -17



4883C1H
719 M



DATA NUMBER 4885

Instrument No.: V-0183

Type: Vector Averaging Current Meter

Depth: 2952 m

Water Depth: 5325 m

Start time: 73-March-15 21.07.36.

Stop time: 73-April-07 19.52.30.

Duration: 22d 22h 45m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

Compass - good

Vane - sticky from April 7 to recovery

Rotor - good

Temperature - good

STATS

DATA/ 4885C9008

	EAST	NORTH	SPEED	***** EAST & NORTH	*****
MEAN	.99	-45.77	58.48	* COVARIANCE	* -217.61
STD. ERR.	.67	.69	.52	* STD. ERR. OF COVARIANCE	* 31.56
VARIANCE	880.16	1056.21	803.48	* STD. DEV. OF COVARIANCE	* 1481.52
STD. DEV.	31.47	32.50	24.57	* CORRELATION COEFFICIENT	* -.213
KURTOSIS	2.32	2.19	2.14	* VECTOR MEAN	* 45.78
SKEWNESS	.19	-.07	.95	* VECTOR VARIANCE	* 1029.18
				* STD. DEV.	* 31.99

UNITS OF RAW DATA VARIABLES = MM/SEC

SAMPLE SIZE = 2204 POINTS *** TEMPERATURE ***
*** DEGREES C. ***

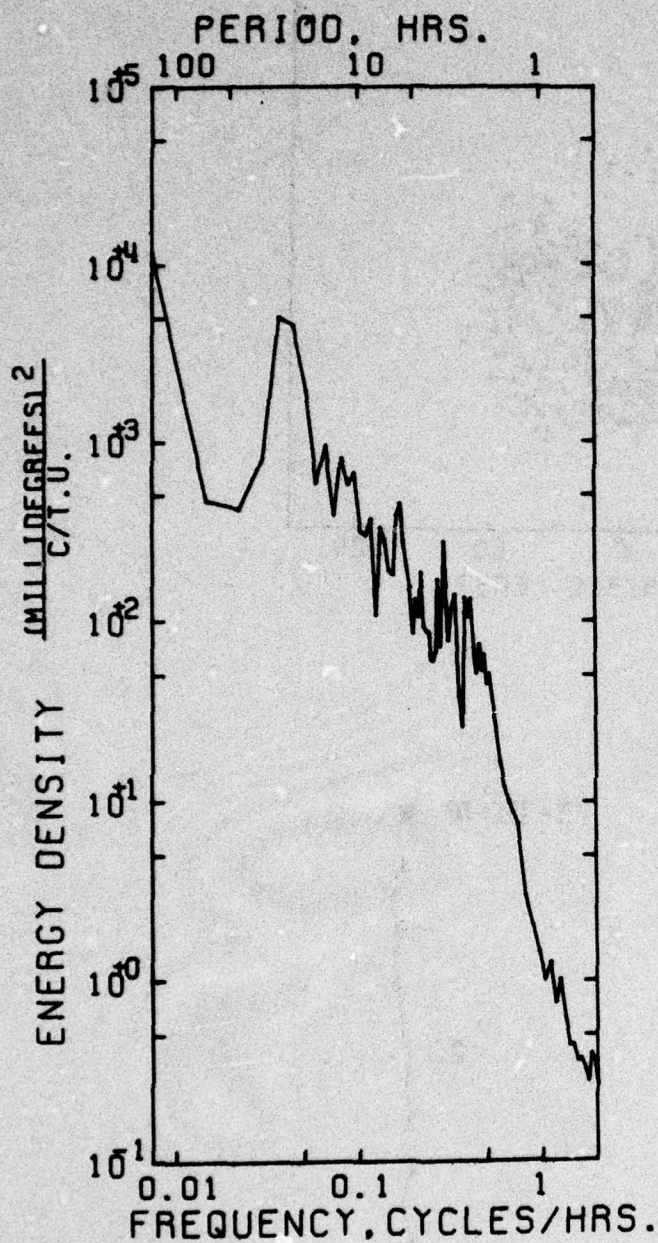
SPANNING RANGE

FROM 73- III-15 21.07.30
TO 73- IV -07 19.52.30

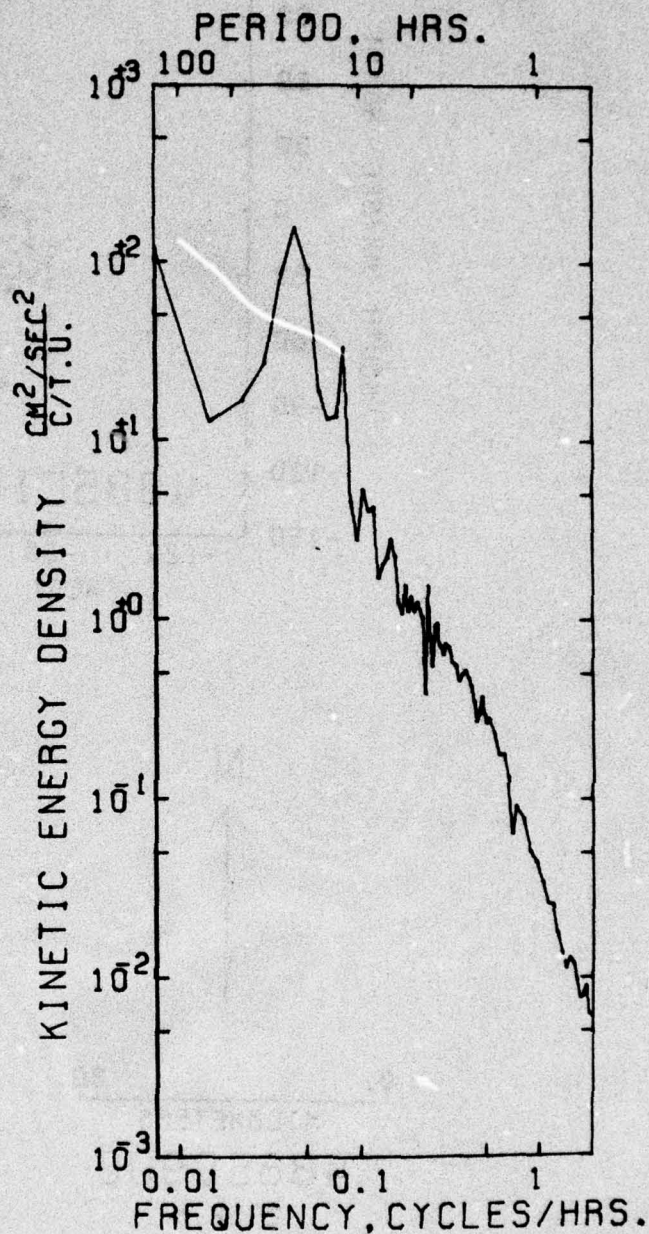
DURATION 22 DAYS 22 H 45 M

MEAN	=	2.950	STD ERR	=	.001
VARIANCE	=	.003			
STD. DEV.	=	.054			
KURTOSIS	=	1.776			
SKEWNESS	=	-.271			

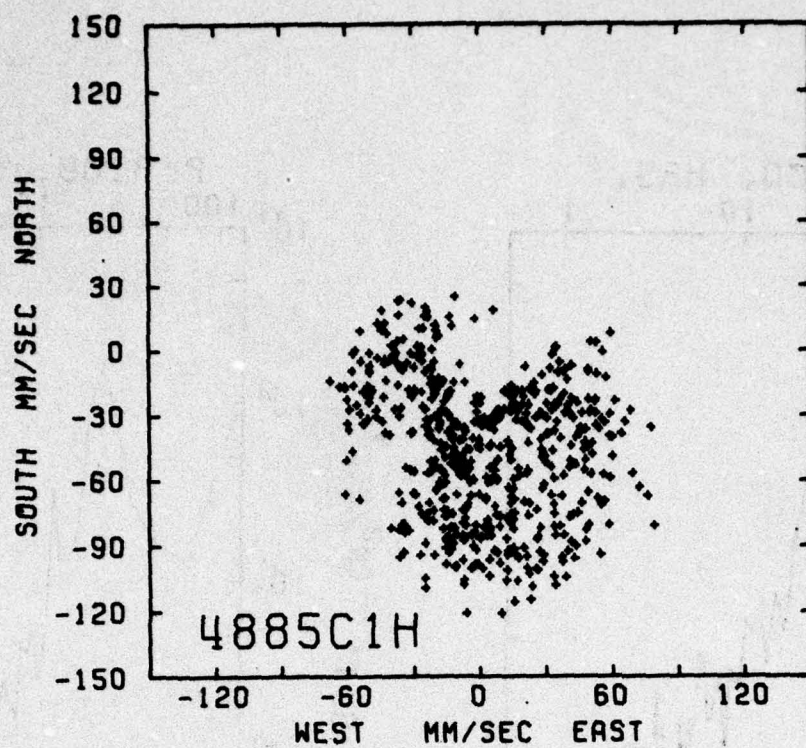
SAMPLE SIZE = 2204 POINTS



AUTO SPECTRUM
4885C900 TEMPERATURE
2952 METERS
73-III-15 TO 73-IV-06
1 PIECES WITH 1080 ESTIMATES
PER PIECE. AVERAGED OVER
4 ADJACENT FREQUENCY BANDS



AUTO SPECTRUM
4885C900 EAST
4885C900 NORTH
2952 METERS
73-III-15 TO 73-IV-07
1 PIECES WITH 1080 ESTIMATES
PER PIECE. AVERAGED OVER
4 ADJACENT FREQUENCY BANDS



0. 30.
KILOMETERS

4885C900

2952 M

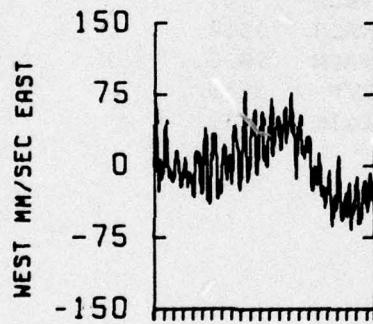
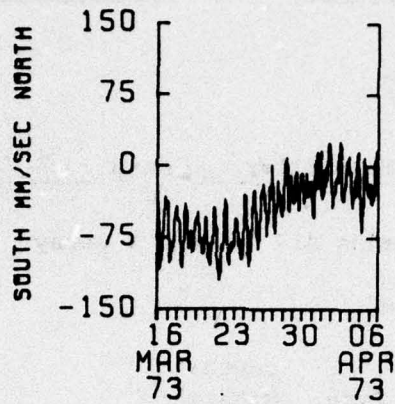
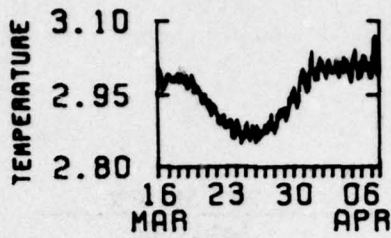
73- III-16 TO 73- IV -07

73-III-16 *

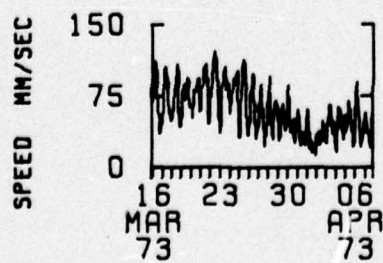
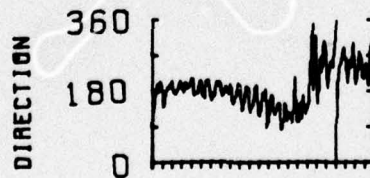
20

25

73-IV-01



4885C1H
2952 M



Mooring No. 489

Set 1973 Mar 16 29° 35.0'N 69° 59.1'W
Year Month Day Latitude Longitude

Set by J. Gifford - R. Heinmiller Ship R.V. CHAIN Cruise 112 Leg 1

Retrieved 1973 June 30
Year Month Day

Retrieved by G. Tupper - R. Heinmiller Ship R.V. CHAIN Cruise 112 Leg 6

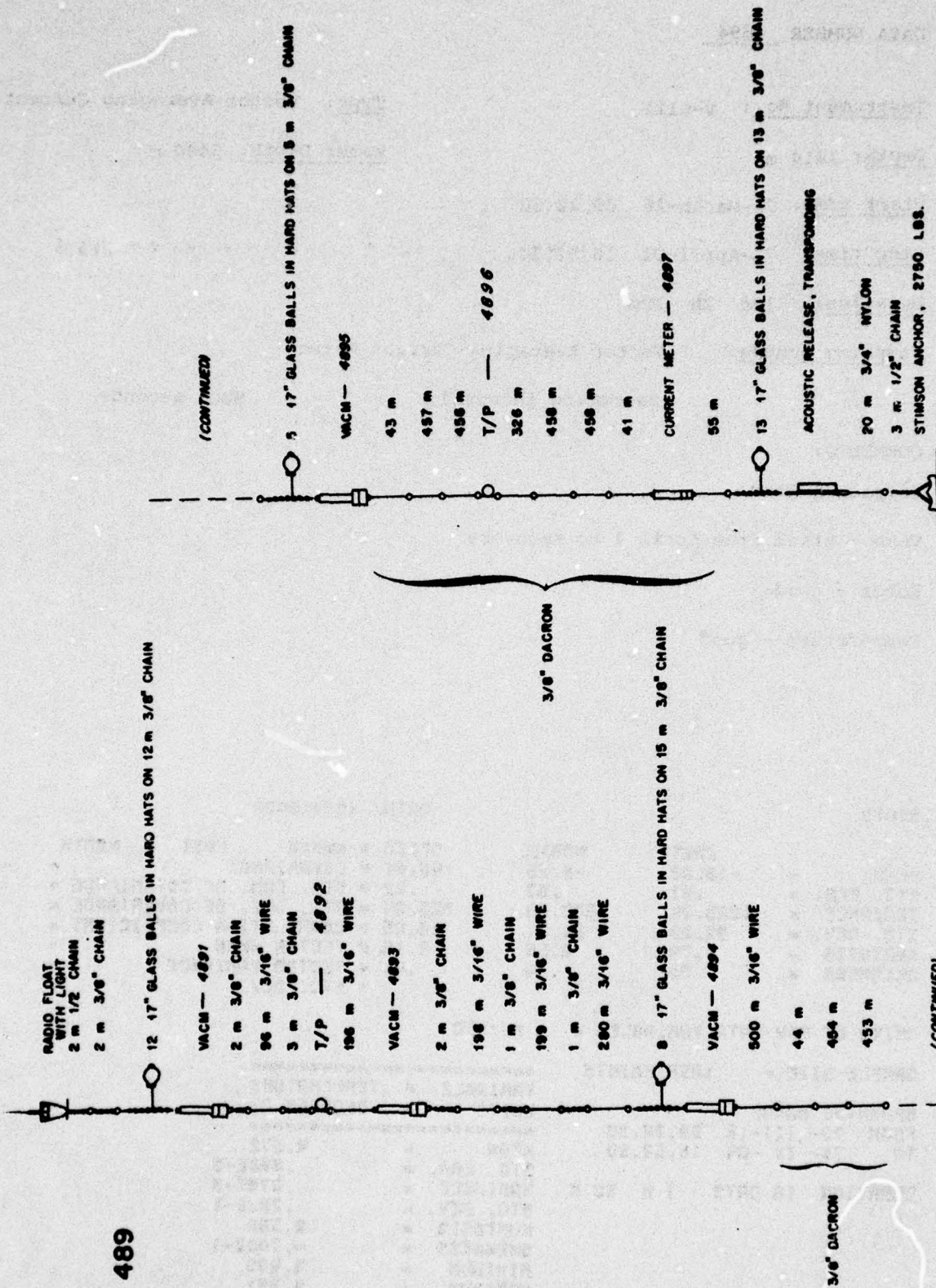
Purpose of Mooring: Mooring #14 of MODE 1 array

Mooring Type: Subsurface

Key	Data Number	Instrument Number	Type	Depth Meters	Comments
+	4891	V-0141	VACM	404	
#	4892	#42	T/P	507	M.I.T.
+	4893	V-0174	VACM	707	U.R.I.
*	4894	V-0111	VACM	1414	
*	4895	V-0179	VACM	2936	
#	4896	#21	T/P	3959	M.I.T.
	4897	N-337	Film	5339	Navy (film recording CM)
	Water depth			5440	

COMMENTS ON MOORING:

STATION 489



DATA NUMBER 4894

Instrument No.: V-0111

Type: Vector Averaging Current Meter

Depth: 1414 m

Water Depth: 5440 m

Start time: 73-March-16 09.22.30.

Stop time: 73-April-04 16.52.30.

Duration: 19d 7h 30m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

Compass - good

Vane - stuck from April 4 to recovery

Rotor - good

Temperature - good

STATS

DATA/ 4894C8008

MEAN	=	EAST	NORTH	SPEED	=	####	EAST & NORTH	####
STD. ERR.	=	-19.82	-3.25	43.61	=	COVARIANCE	=	-149.64
VARIANCE	=	.81	.57	.42	=	STD. ERR. OF COVARIANCE	=	21.13
STD. DEV.	=	1223.84	800.80	325.84	=	STD. DEV. OF COVARIANCE	=	810.07
KURTOSIS	=	34.98	24.51	18.05	=	CORRELATION COEFFICIENT	=	-.174
SKEWNESS	=	1.78	2.56	2.15	=	VECTOR MEAN	=	20.08
	=	.09	.14	.41	=	VECTOR VARIANCE	=	912.37
					=	STD. DEV.	=	30.21

UNITS OF RAW DATA VARIABLES = MM/SEC

SAMPLE SIZE = 1855 POINTS

SPANNING RANGE

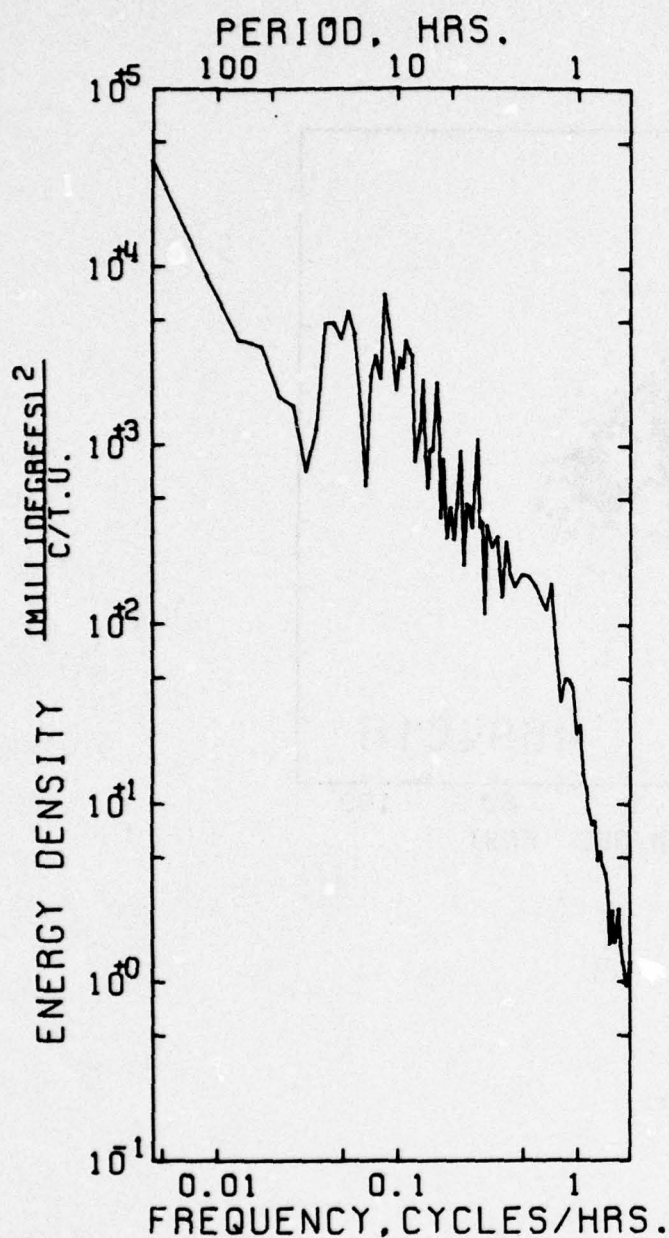
FROM 73- III-16 09.22.30

TO 73- IV -04 16.52.30

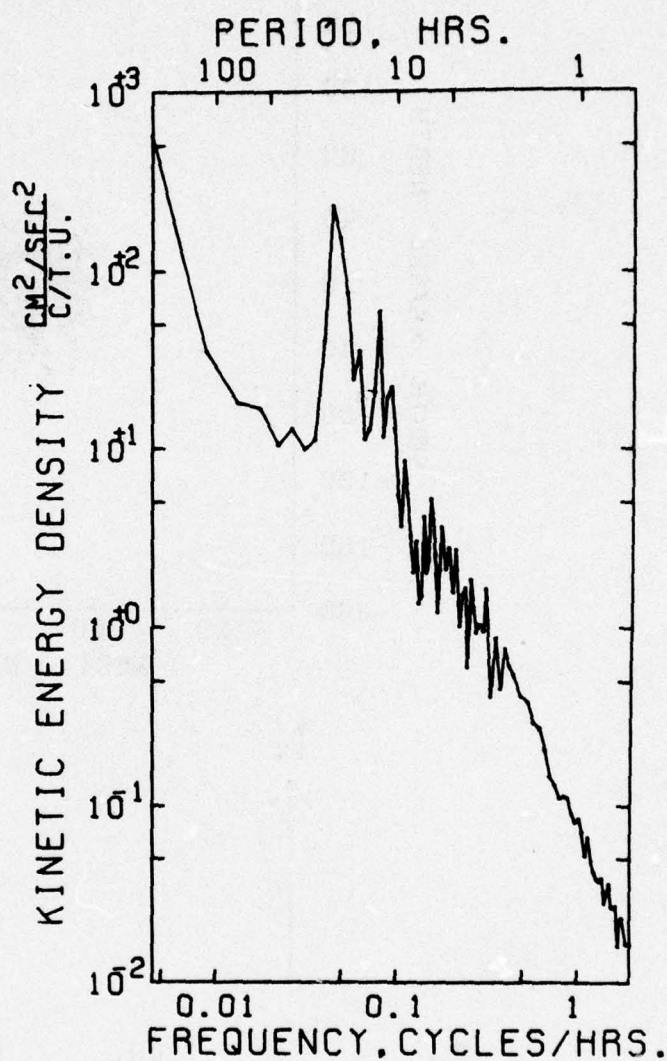
DURATION 18 DAYS 7 H 30 M

VARIABLE = TEMPERATURE
UNITS = DEGREES C.

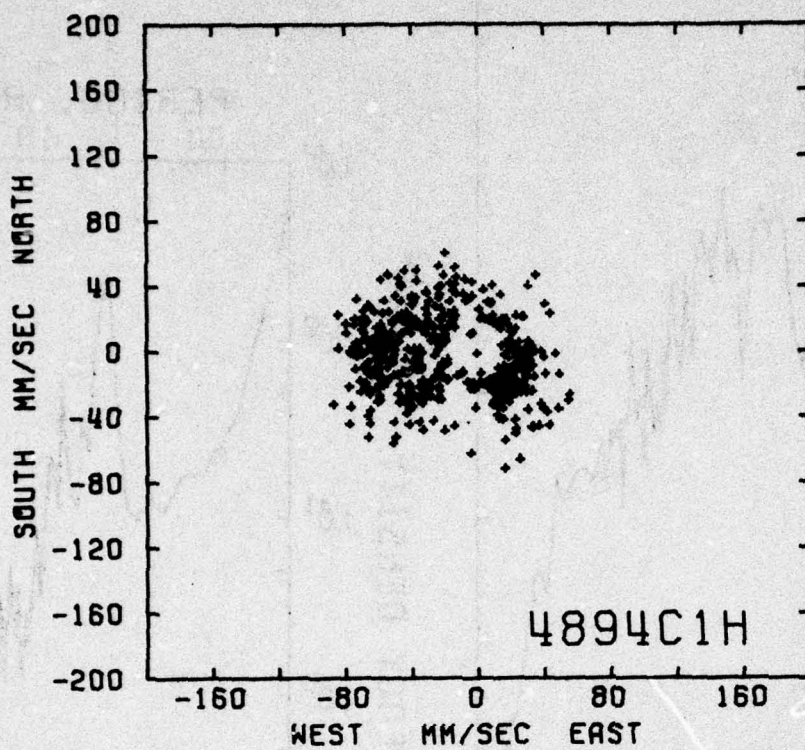
MEAN = 4.572
STD. ERR. = .888E-3
VARIANCE = .878E-3
STD. DEV. = .296E-1
KURTOSIS = 2.588
SKEWNESS = -.708E-1
MINIMUM = 4.483
MAXIMUM = 4.661



AUTO SPECTRUM
4894C900 TEMPERATURE
1414 METERS
73-III-16 TO 73-IV-03
1 PIECES WITH 900 ESTIMATES
PER PIECE. AVERAGED OVER
2 ADJACENT FREQUENCY BANDS



AUTO SPECTRUM
4894C900 EAST
4894C900 NORTH
1414 METERS
73-III-16 TO 73-IV-04
1 PIECES WITH 900 ESTIMATES
PER PIECE. AVERAGED OVER
2 ADJACENT FREQUENCY BANDS

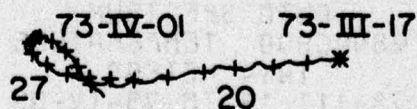


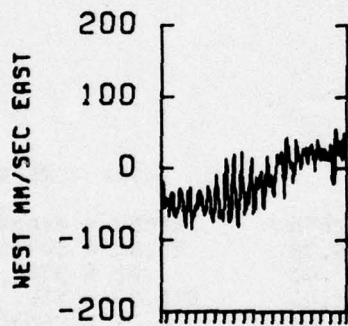
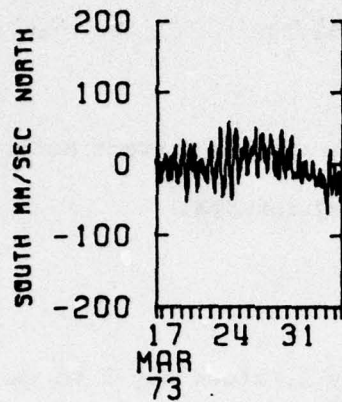
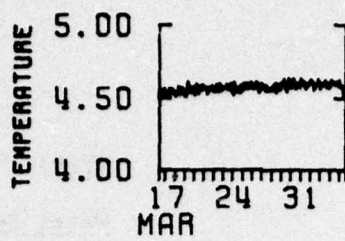
0. 40.
KILOMETERS

4894C900

:414 M

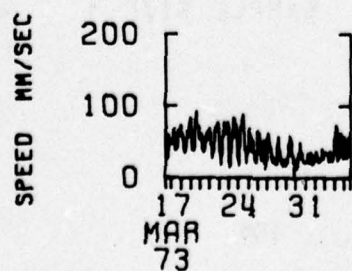
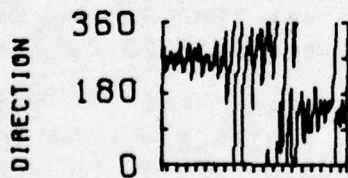
73- III-17 TO 73- IV -04





4894C1H

1414 M



DATA NUMBER 4895

Instrument No.: V-0179

Type: Vector Averaging Current Meter

Depth: 2936 m

Water Depth: 5440 m

Start time: 73-March-16 16.07.30.

Stop time: 73-April-28 03.52.30.

Duration: 42d 11h 45m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

Compass - good

Vane - sticky April 28 to May 5, stuck May 5 to recovery

Rotor - May 6 to May 19 rotor low, suspicious. May 19 to recovery
rotor below threshold

Temperature - good

STATS

DATA/ 48958900A

MEAN	=	EAST	NORTH	SPEED	=	*****	EAST & NORTH	*****
STD. ERR.	=	1.63	-6.76	39.09	=	COVARIANCE	=	-74.84
VARIANCE	=	.52	.40	.23	=	STD. ERR. OF COVARIANCE	=	10.58
STD. DEV.	=	1096.73	658.09	218.47	=	STD. DEV. OF COVARIANCE	=	676.50
KURTOSIS	=	33.12	25.65	14.71	=	CORRELATION COEFFICIENT	=	-.088
SKEWNESS	=	2.80	2.04	3.66	=	VECTOR MEAN	=	6.85
	=	-.50	.09	.92	=	VECTOR VARIANCE	=	877.41
					=	STD. DEV.	=	29.62

UNITS OF RAW DATA VARIABLES = MM/SEC

SAMPLE SIZE = 4080 POINTS *** TEMPERATURE ***
*** DEGREES C. ***

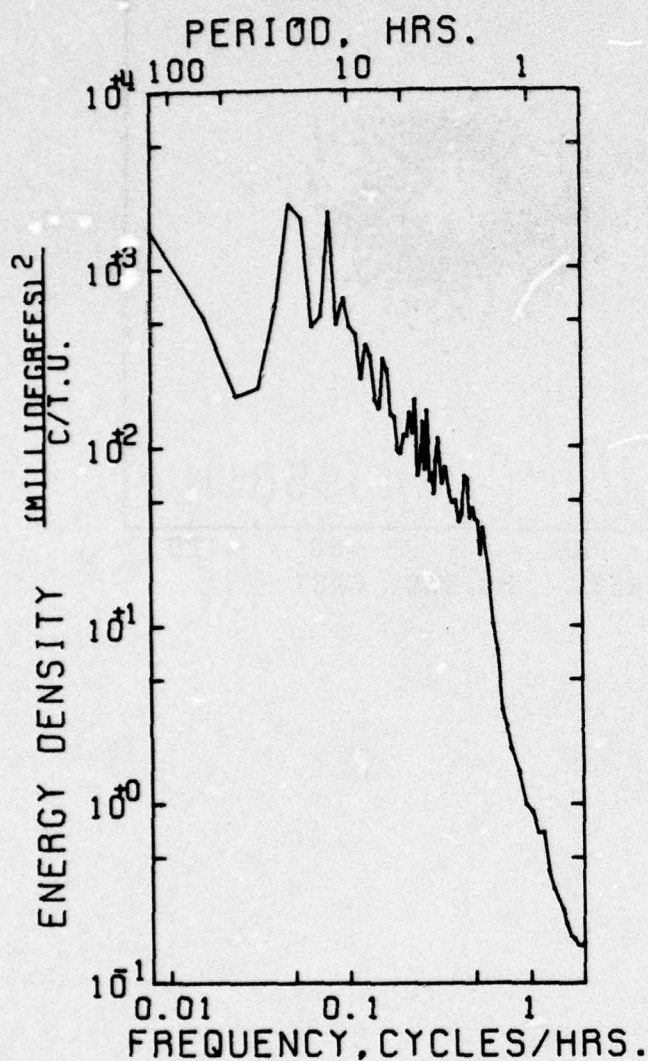
SPANNING RANGE

FROM 73- III-16 16.07.30
TO 73- IV -28 03.52.30

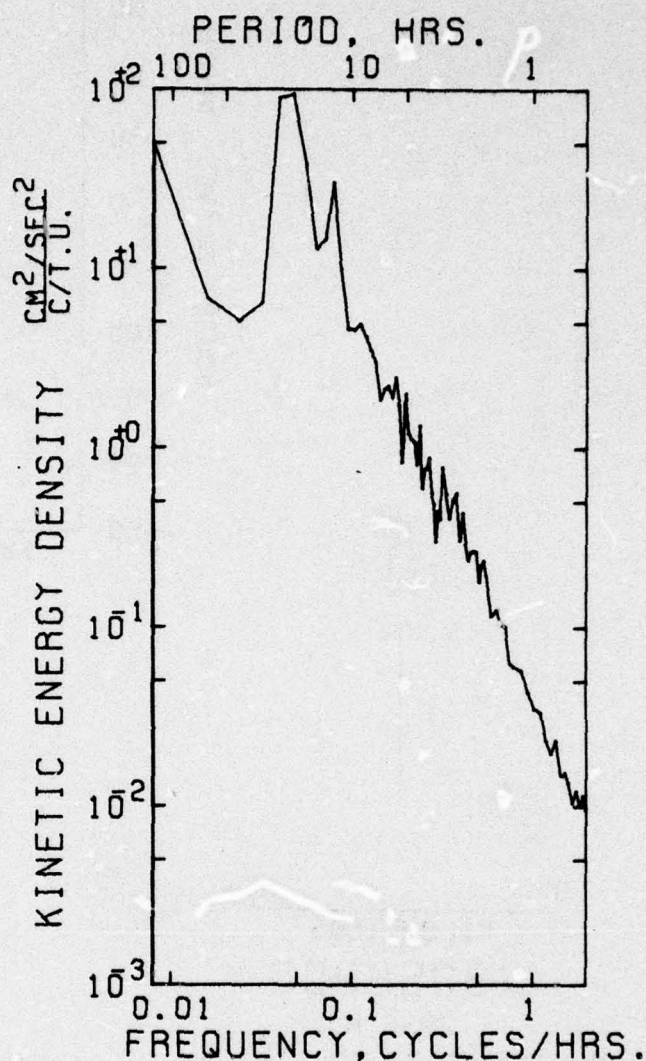
DURATION 42 DAYS 11 H 45 M

MEAN	=	2.780	STD ERR	=	.000
VARIANCE	=	.000			
STD. DEV.	=	.017			
KURTOSIS	=	3.205			
SKEWNESS	=	-.480			

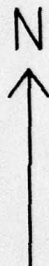
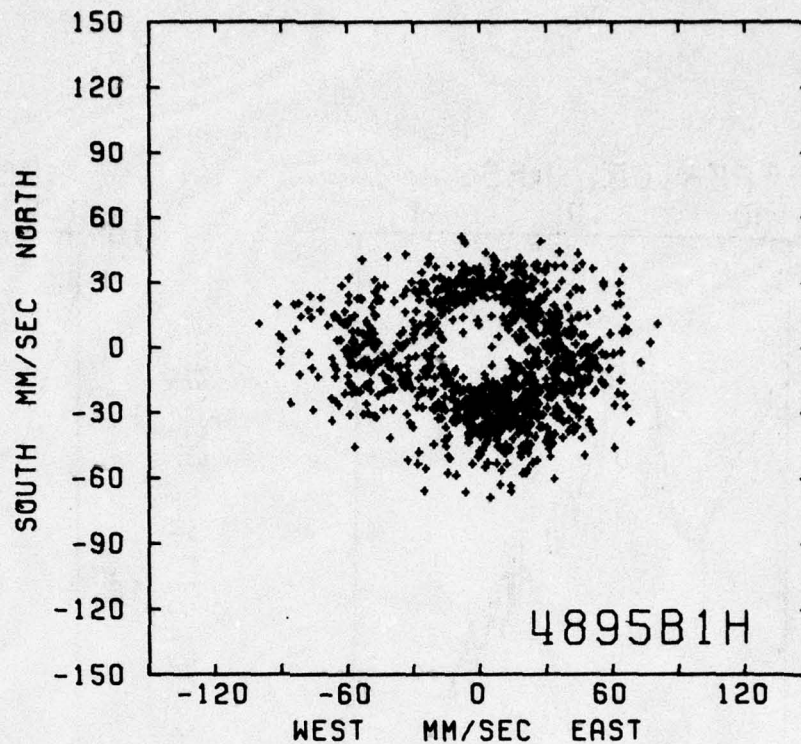
SAMPLE SIZE = 4080 POINTS



AUTO SPECTRUM
48958900 TEMPERATURE
2936 METERS
73-III-16 TO 73-IV-27
1 PIECES WITH 2025 ESTIMATES
PER PIECE. AVERAGED OVER
8 ADJACENT FREQUENCY BANDS



AUTO SPECTRUM
48958900 EAST COMP
48958900 NORTH COMP
2936 METERS
73-III-16 TO 73-IV-27
1 PIECES WITH 2025 ESTIMATES
PER PIECE. AVERAGED OVER
8 ADJACENT FREQUENCY BANDS

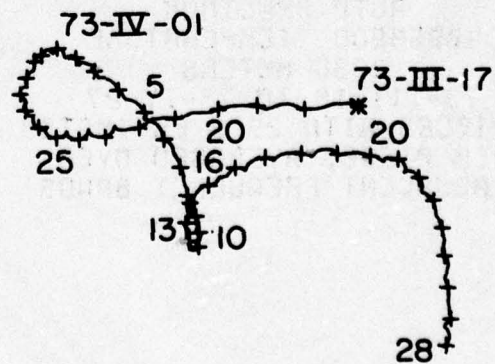


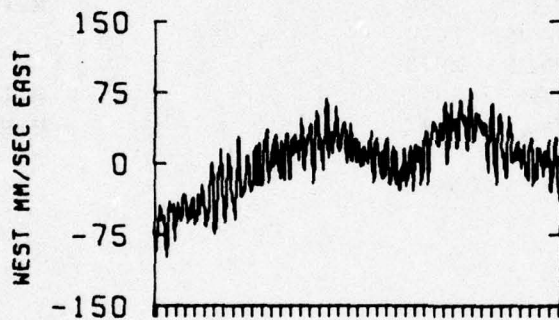
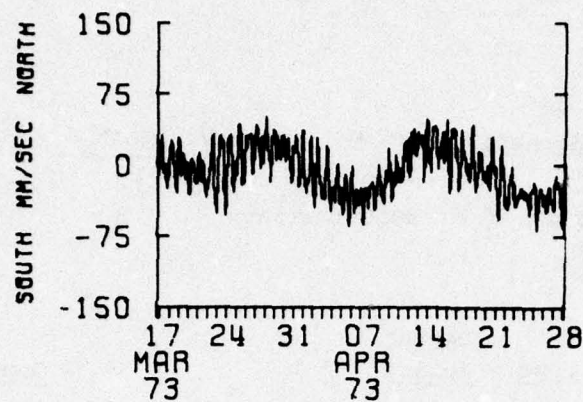
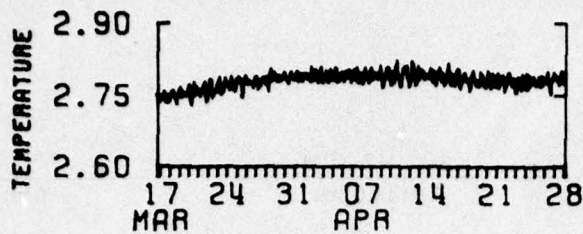
0. ————— 30.
KILOMETERS

4895B900

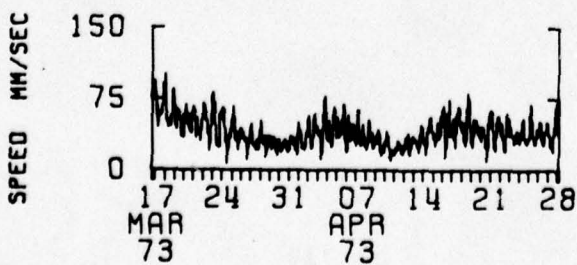
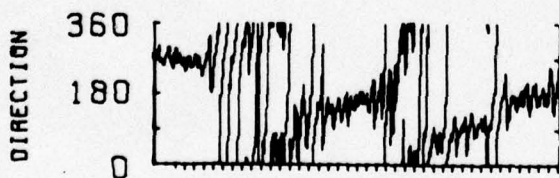
2936 M

73- III-17 TO 73- IV -28





4895B1H
2936 M



Mooring No. 493

Set 1973 Mar 31 28° 42.0'N 70° 15.8'W
Year Month Day Latitude Longitude

Set by G. Tupper - R. Heinmiller Ship R.V. CHAIN Cruise 112 Leg 2

Retrieved 1973 June 30
Year Month Day

Retrieved by G. Tupper - R. Heinmiller Ship R.V. CHAIN Cruise 112 Leg 6

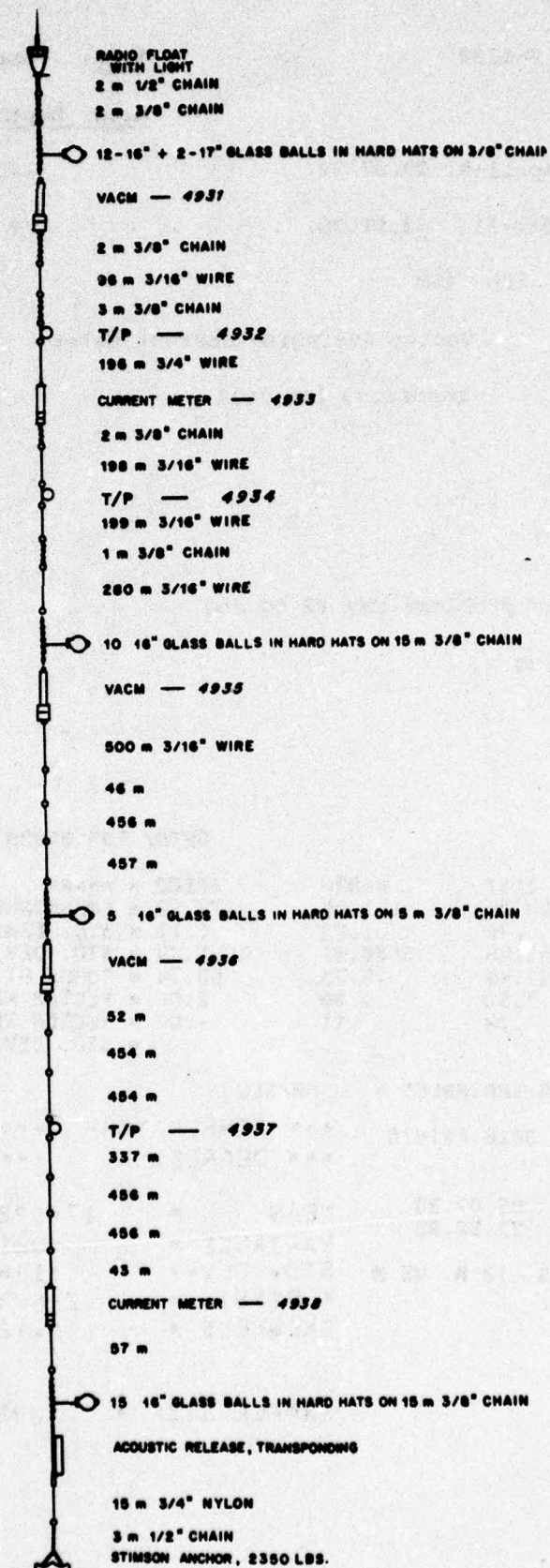
Purpose of Mooring: Mooring #6 of MODE 1 array

Mooring Type: Subsurface

Key	Data Number	Instrument Number	Type	Depth Meters	Comments
*	4931	V-0199	VACM	408	
#	4932	#34	T/P	512	M.I.T.
*	4933	M-142t	850	709	
#	4934	#52	T/P	908	M.I.T.
*	4935	V-0195	VACM	1410	
*	4936	V-0138	VACM	2933	
#	4937	#25	T/P	3957	M.I.T.
	4938	M-179	850	5347	U.R.I.
	Water depth			5446	

COMMENTS ON MOORING:

STATION 493



DATA NUMBER 4931

Instrument No.: V-0199

Type: Vector Averaging Current Meter

Depth: 408 m

Water Depth: 5446 m

Start time: 73-April-01 09.07.30.

Stop time: 73-May-11 23.52.30.

Duration: 40d 18h 45m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

Compass - good

Vane - good

Rotor - threshold problems May 12 to end

Temperature - good

STATS

DATA/ 49318900A

	EAST	NORTH	SPEED	*****	EAST & NORTH	*****
MEAN	84.24	141.85	174.62	* COVARIANCE		168.83
STD. ERR.	.76	1.23	1.11	* STD. ERR. OF COVARIANCE		163.11
VARIANCE	2251.45	5888.81	4883.44	* STD. DEV. OF COVARIANCE		10206.83
STD. DEV.	47.45	76.73	69.74	* CORRELATION COEFFICIENT		.048
KURTOSIS	2.52	1.88	2.00	* VECTOR MEAN		184.88
SKEWNESS	-.09	.11	-.00	* VECTOR VARIANCE		4089.13
				* STD. DEV.		63.78

UNITS OF RAW DATA VARIABLES = MM/SEC

SAMPLE SIZE = 3916 POINTS

*** TEMPERATURE ***

*** DEGREES C. ***

SPANNING RANGE

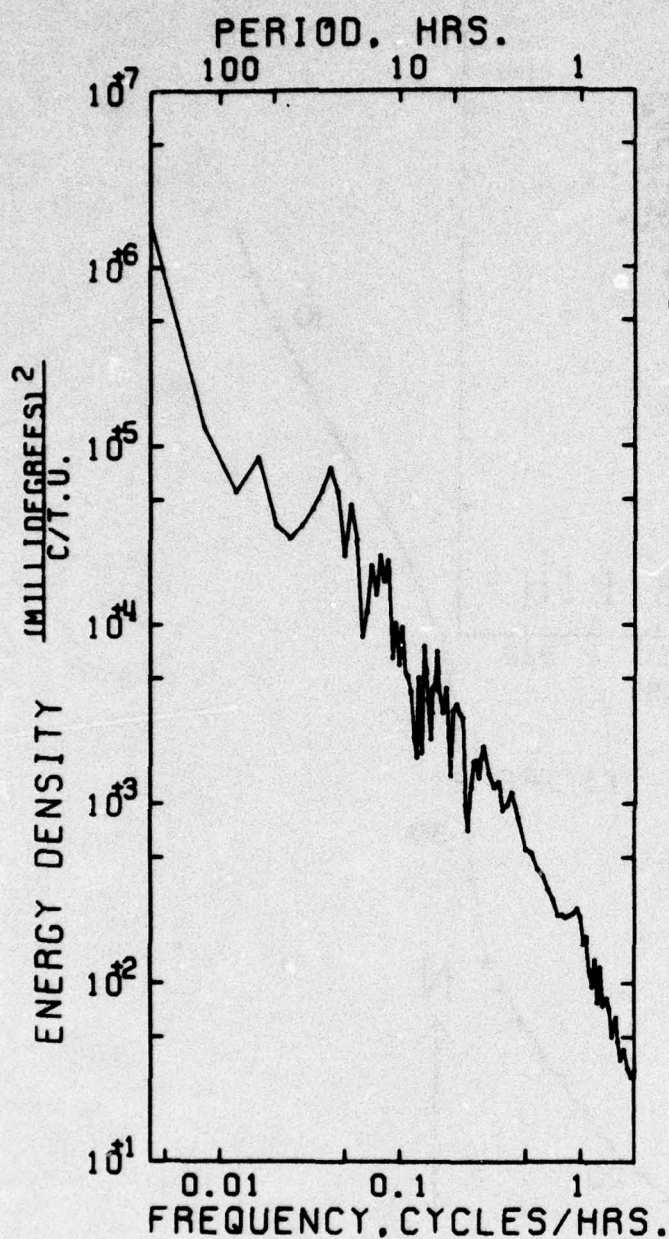
FROM 73- IV -01 05.07.30

TO 73- V -11 23.52.30

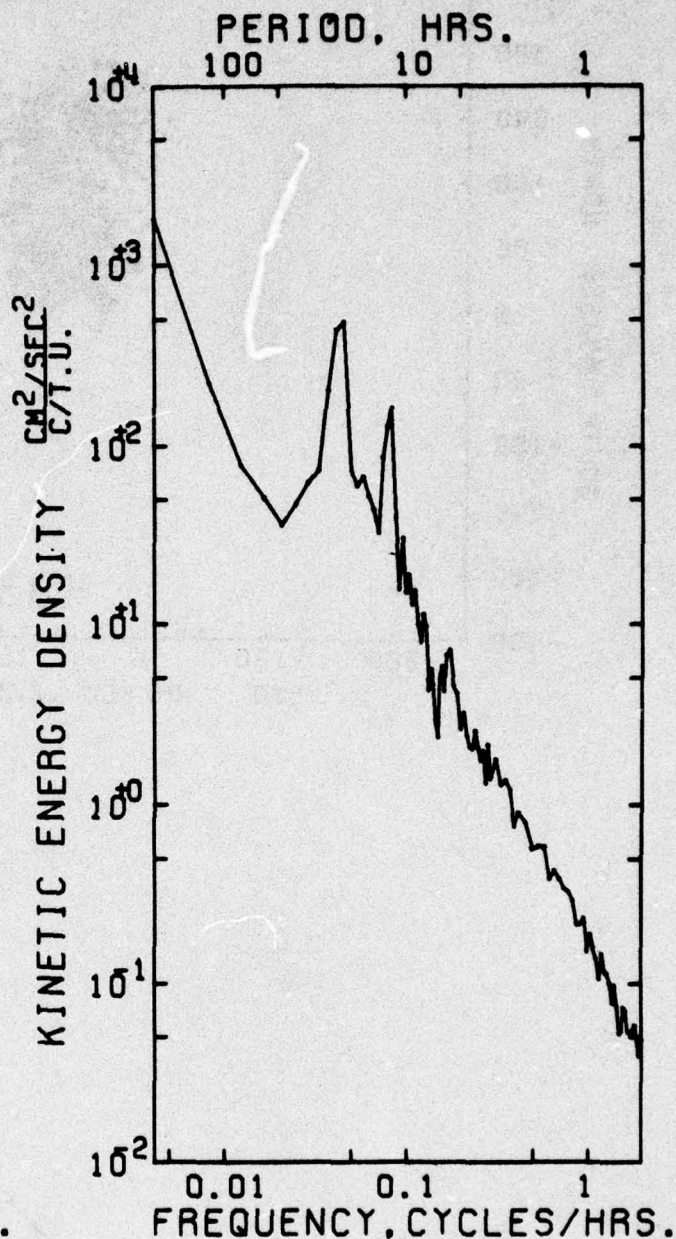
DURATION 40 DAYS 18 H 45 M

MEAN	=	17.122	STD ERR	=	.002
VARIANCE	=	.021			
STD. DEV.	=	.146			
KURTOSIS	=	2.622			
SKEWNESS	=	-.127			

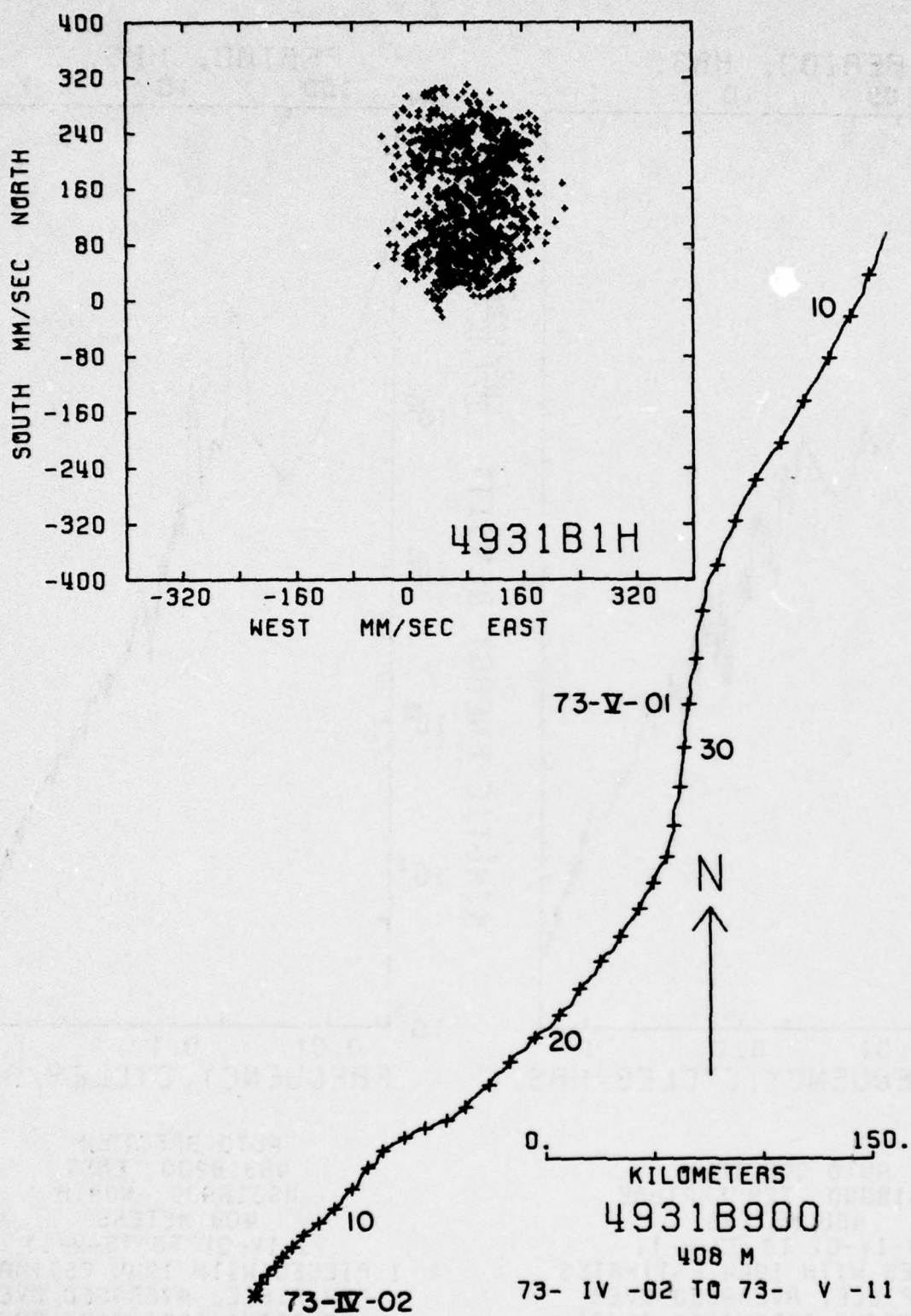
SAMPLE SIZE = 3916 POINTS

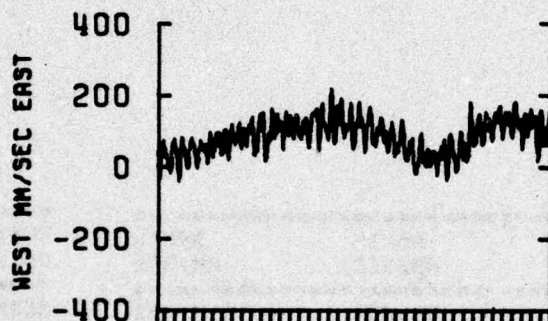
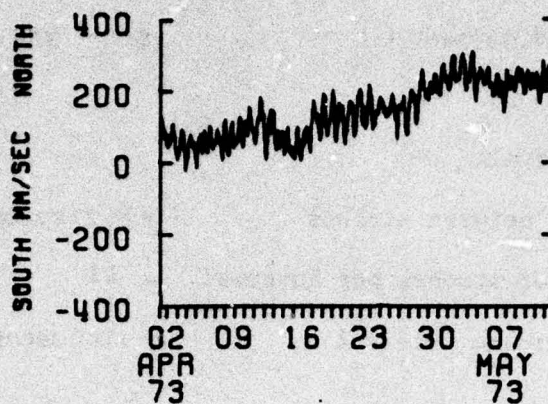
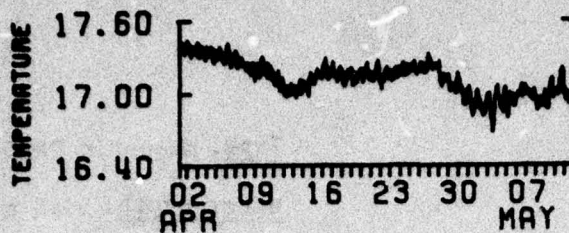


AUTO SPECTRUM
49318900 TEMPERATURE
408 METERS
73-IV-01 TO 73-V-11
1 PIECES WITH 1944 ESTIMATES
PER PIECE. AVERAGED OVER
4 ADJACENT FREQUENCY BANDS

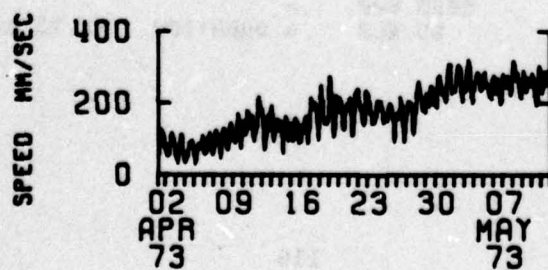
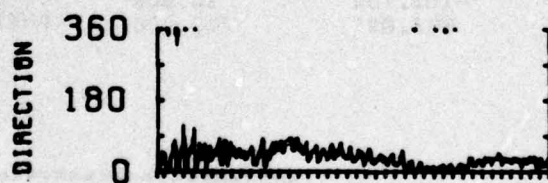


AUTO SPECTRUM
49318900 EAST
49318900 NORTH
408 METERS
73-IV-01 TO 73-V-11
1 PIECES WITH 1944 ESTIMATES
PER PIECE. AVERAGED OVER
4 ADJACENT FREQUENCY BANDS





4931B1H
408 M



DATA NUMBER 4933

Instrument No.: M-142t

Type: Magnetic Tape Recording Current Meter

Depth: 709 m

Water depth: 5446 m

Start time: 73-April-02 00.03.34

Stop time: 73-June-30 17.33.34

Duration: 89d 17h 30m

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 13

recording interval = 1800 seconds

COMMENTS:

All variables look good entire record

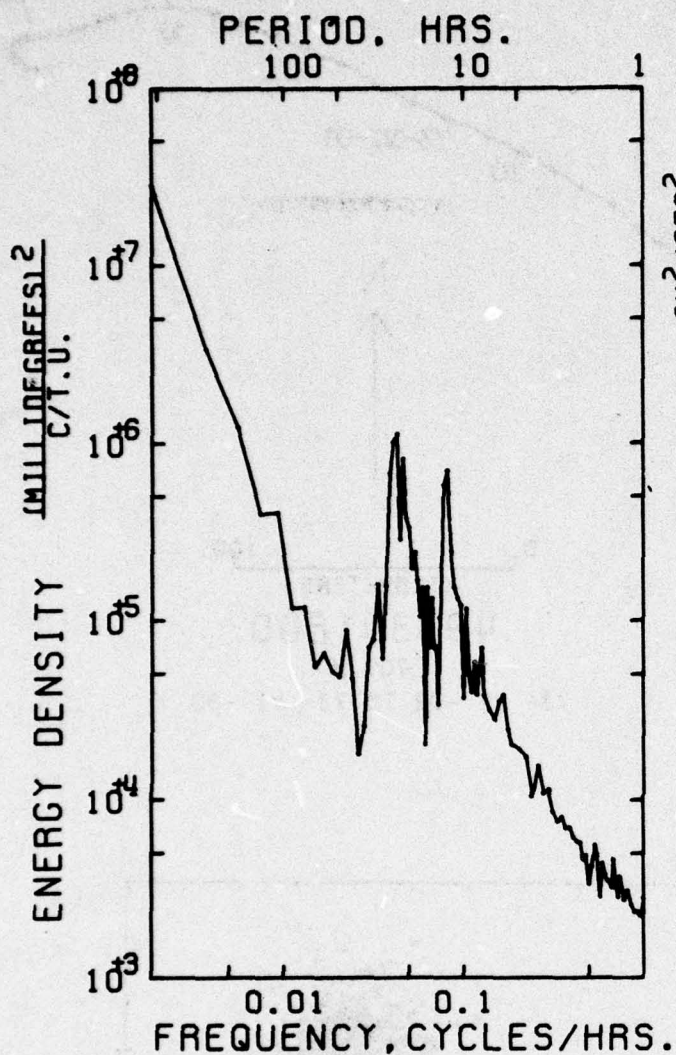
DATA/ 493301800

VARIABLE	EAST	NORTH	SPEED	VARIABLE	TEMPERATURE
UNITS	MM/SEC	MM/SEC	MM/SEC	UNITS	DEGREES C.
MEAN	81.457	85.501	112.075	MEAN	11.877
STD. ERR.	.839	.998	.809	STD. ERR.	.018E-2
VARIANCE	3036.065	4275.233	2817.894	VARIANCE	.287
STD. DEV.	55.100	65.385	53.084	STD. DEV.	.536
KURTOSIS	2.824	2.500	2.221	KURTOSIS	2.692
SKEWNESS	-.147	.138E-1	-.303E-1	SKEWNESS	-.788
MINIMUM	-120.575	-103.102	16.000	MINIMUM	10.217
MAXIMUM	204.003	246.891	260.000	MAXIMUM	12.945

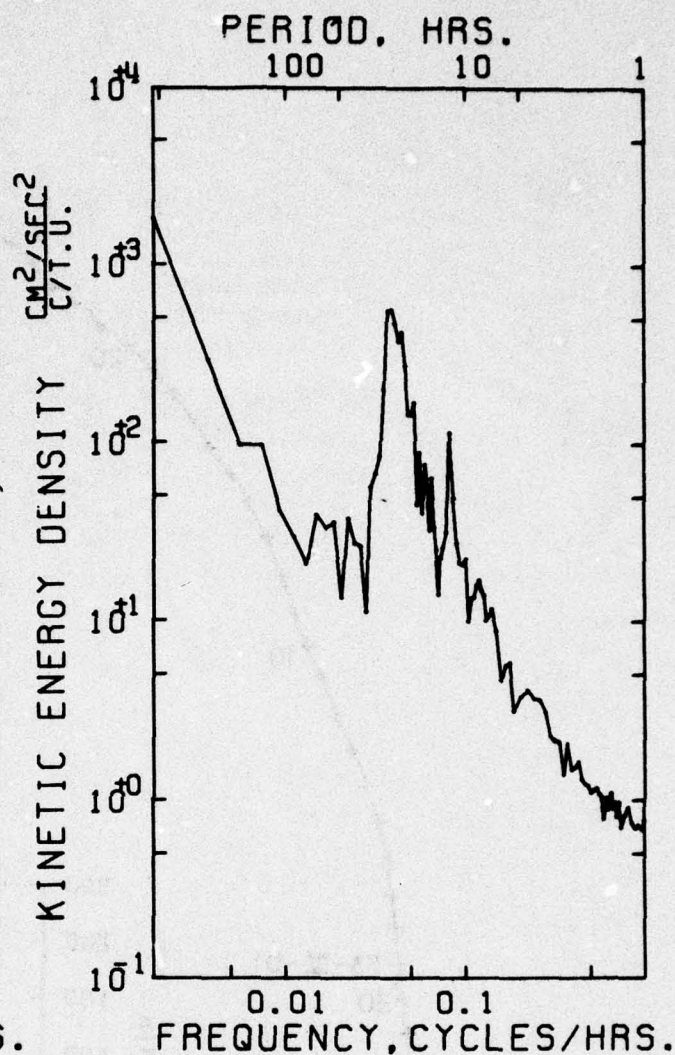
EAST & NORTH

COVARIANCE = 652.188
STD. ERR. OF COVARIANCE = 86.030
STD. DEV. OF COVARIANCE = 5848.504
CORRELATION COEFFICIENT = .181
VECTOR MEAN = 89.818
VECTOR VARIANCE = 3655.649
VECTOR STD. DEV. = 60.462

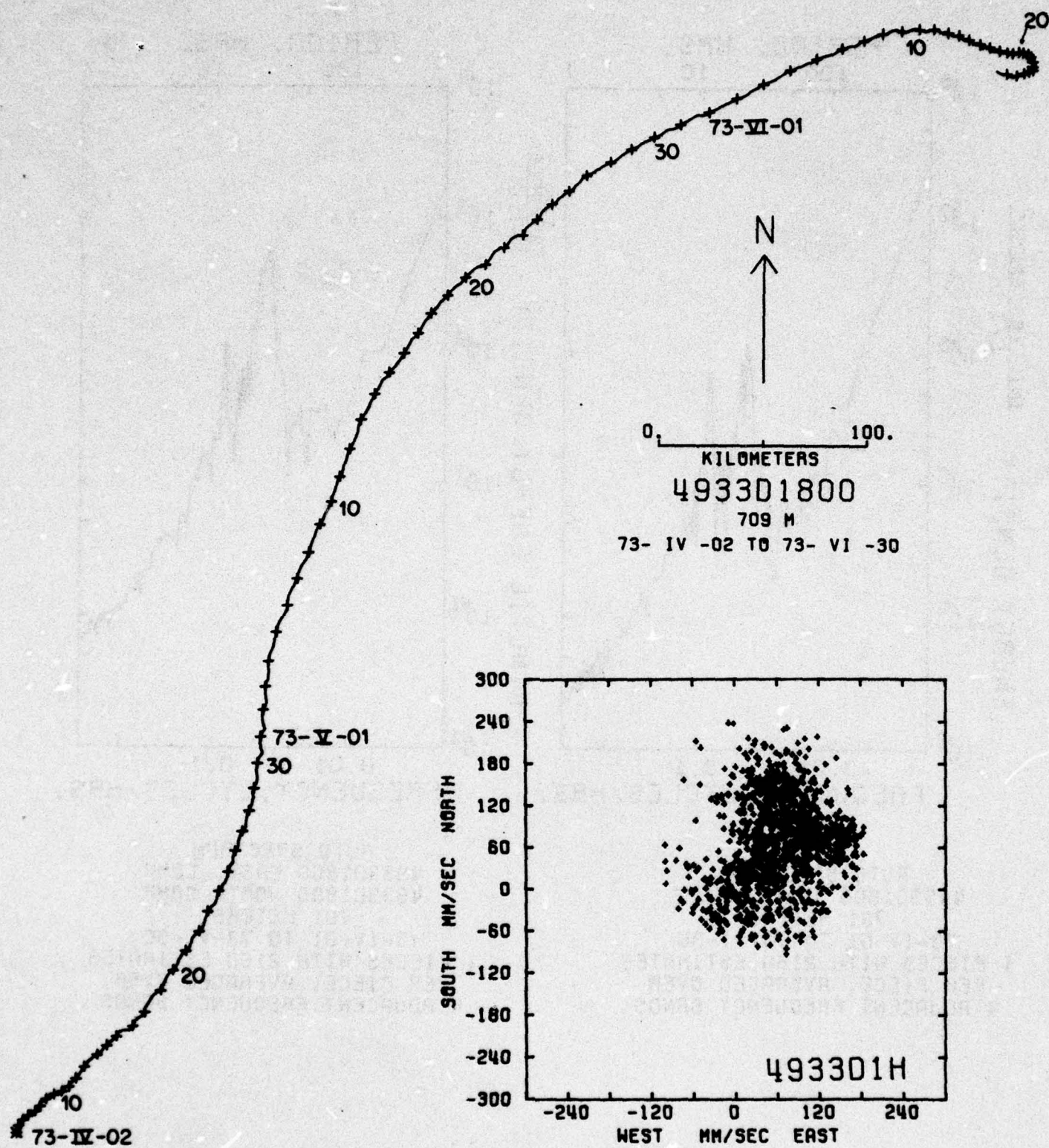
SAMPLE SIZE = 4308 POINTS
SPANNING RANGE
FROM 73- IV -02 00.03.34
TO 73- VI -30 17.33.34
DURATION 89.73 DAYS

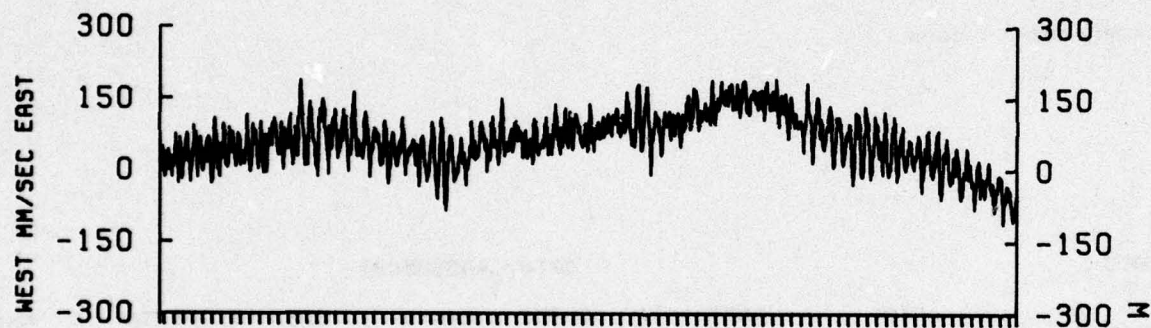
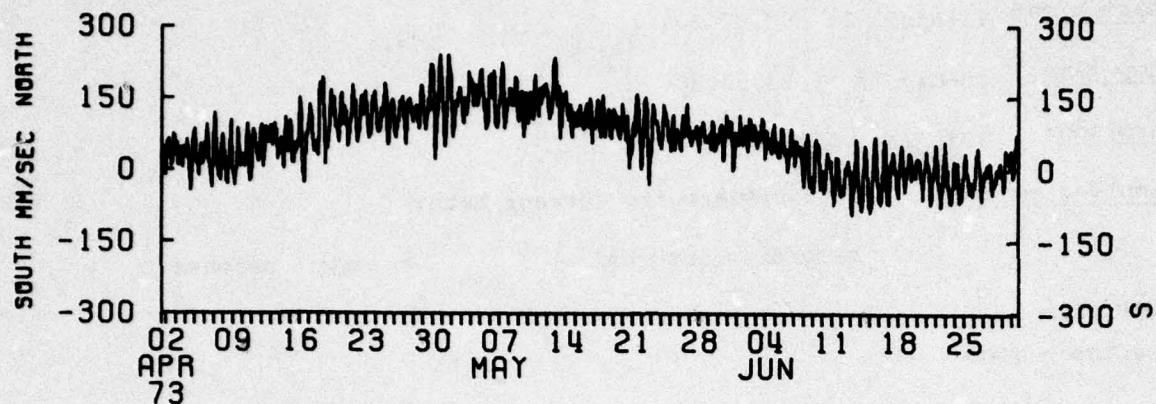
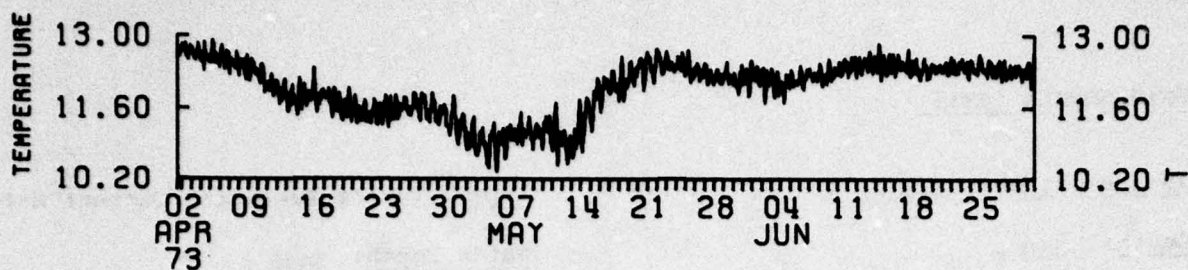


AUTO SPECTRUM
4933D1800 TEMPERATURE
791 METERS
73-IV-01 TO 73-VI-30
1 PIECES WITH 2160 ESTIMATES
PER PIECE. AVERAGED OVER
4 ADJACENT FREQUENCY BANDS

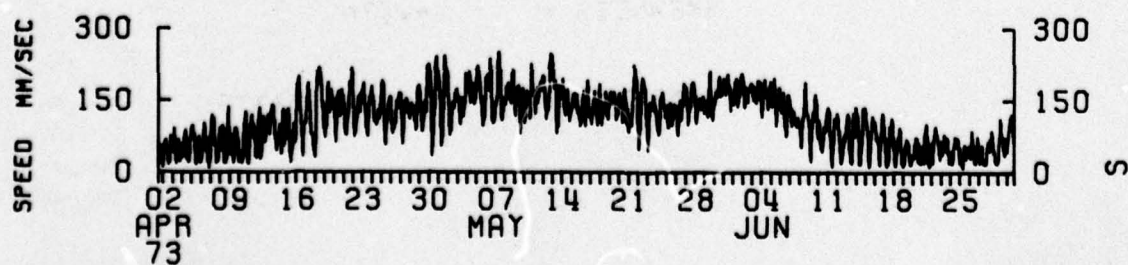
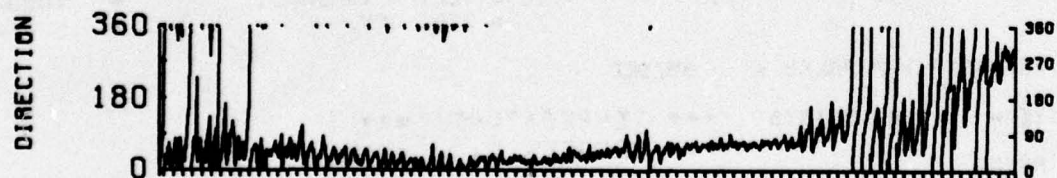


AUTO SPECTRUM
4933D1800 EAST COMP
4933D1800 NORTH COMP
791 METERS
73-IV-01 TO 73-VI-30
1 PIECES WITH 2160 ESTIMATES
PER PIECE. AVERAGED OVER
4 ADJACENT FREQUENCY BANDS





4933D1H



DATA NUMBER 4935

Instrument No.: V-0195

Type: Vector Averaging Current Meter

Depth: 1410 m

Water Depth: 5446 m

Start time: 73-April-21 00.07.30.

Stop time: 73-May-13 23.52.30.

Duration: 22d 23h 45m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

Compass - good

Vane - stuck May 14 to recovery

Rotor - at threshold April 10 to April 20

Temperature - good

STATS

DATA/ 493589008

MEAN	=	EAST	NORTH	SPEED	=	*****	EAST & NORTH	*****
STD. ERR.	=	4.11	28.00	49.49	=	COVARIANCE	=	65.58
VARIANCE	=	.71	.69	.48	=	STD. ERR. OF COVARIANCE	=	29.04
STD. DEV.	=	1116.11	1045.51	513.63	=	STD. DEV. OF COVARIANCE	=	1364.13
KURTOSIS	=	33.41	32.33	22.66	=	CORRELATION COEFFICIENT	=	.062
SKEWNESS	=	2.68	2.98	3.02	=	VECTOR MEAN	=	28.90
	=	-.13	-.00	.70	=	VECTOR VARIANCE	=	1080.81
					=	STD. DEV.	=	32.88

UNITS OF RAW DATA VARIABLES = MM/SEC

SAMPLE SIZE = 2208 POINTS *** TEMPERATURE ***
*** DEGREES C. ***

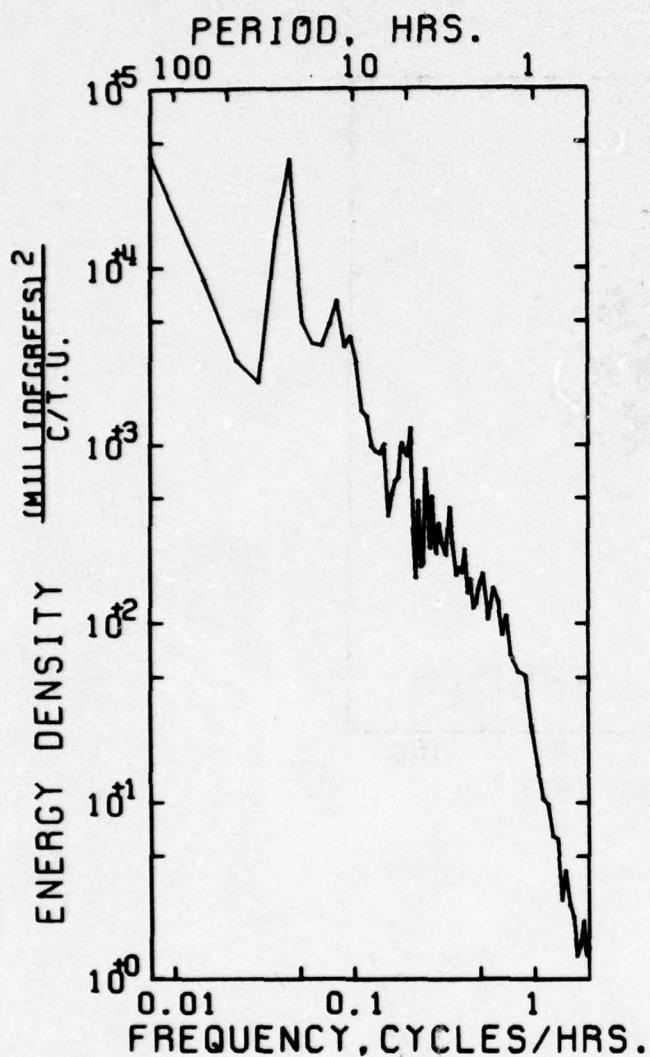
SPANNING RANGE

FROM 73- IV -21 00.07.30
TO 73- V -13 23.52.30

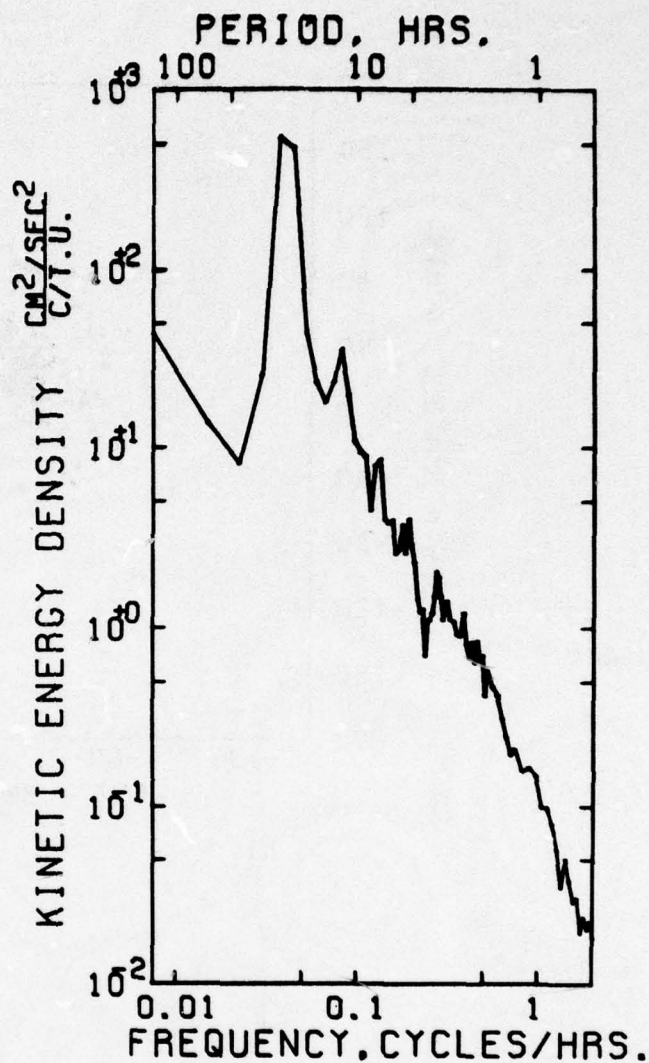
DURATION 22 DAYS 23 H 45 M

MEAN	=	4.432	STD ERR	=	.001
VARIANCE	=	.001			
STD. DEV.	=	.038			
KURTOSIS	=	2.936			
SKEWNESS	=	-.176			

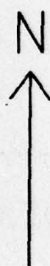
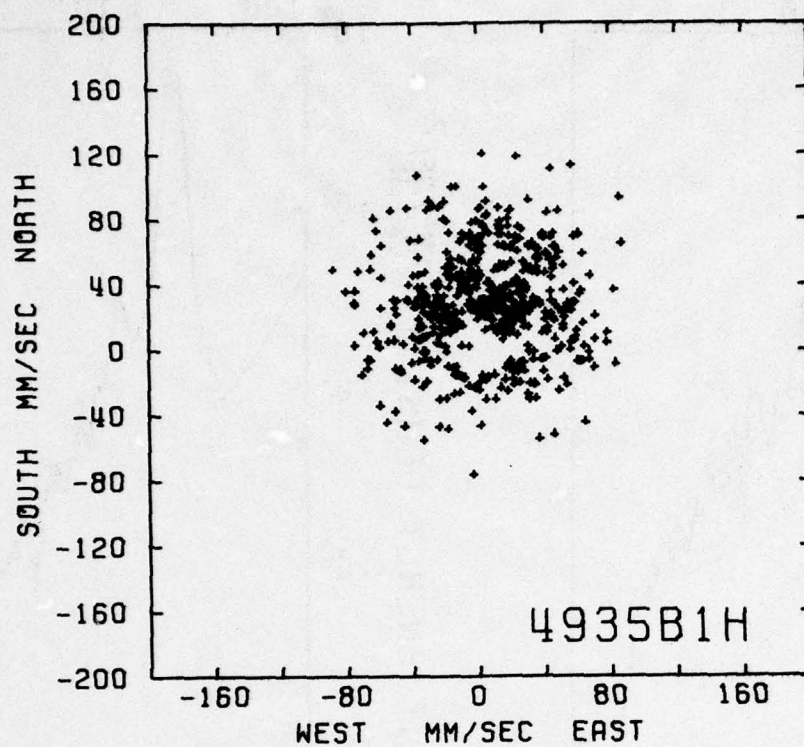
SAMPLE SIZE = 2208 POINTS



AUTO SPECTRUM
 49358900 TEMPERATURE
 1410 METERS
 73-IV-21 TO 73-V-13
 1 PIECES WITH 1080 ESTIMATES
 PER PIECE. AVERAGED OVER
 4 ADJACENT FREQUENCY BANDS



AUTO SPECTRUM
 49358900 EAST
 49358900 NORTH
 1410 METERS
 73-IV-21 TO 73-V-13
 1 PIECES WITH 1080 ESTIMATES
 PER PIECE. AVERAGED OVER
 4 ADJACENT FREQUENCY BANDS

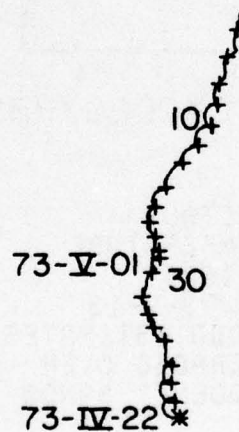


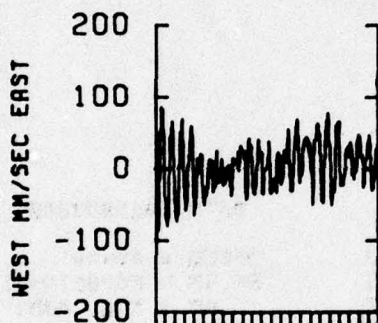
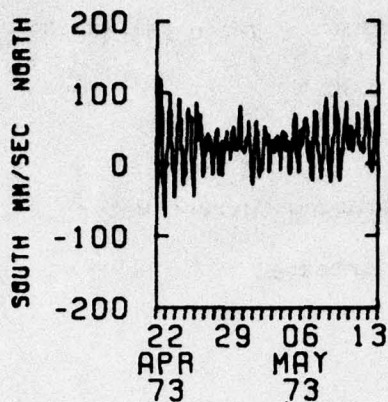
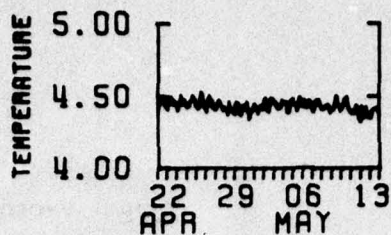
0. 40.
KILOMETERS

4935B900

1410 M

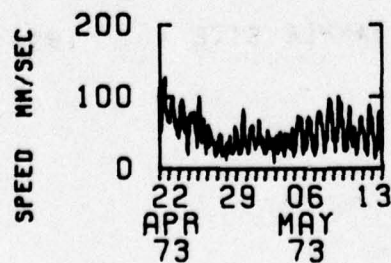
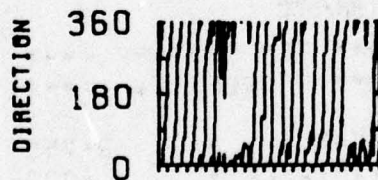
73- IV -22 TO 73- V -13





4935B1H

1410 M



DATA NUMBER 4936

Instrument No.: V-0138

Type: Vector Averaging Current Meter

Depth: 2933 m

Water Depth: 5446 m

Start time: 73-April-01 01.07.30.

Stop time: 73-April-21 04.52.30.

Duration: 20d 3h 45m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

Compass - good

Vane - sticky April 21 to 29, stuck April 29 to recovery

Rotor - good

Temperature - good

STATS

DATA/ 49360900A

	EAST	NORTH	SPEED	*****	EAST & NORTH	*****
MEAN	-21.83	48.25	56.46	COVARIANCE		-43.82
STD. ERR.	.43	.42	.40	STD. ERR. OF COVARIANCE		25.28
VARIANCE	961.45	334.00	312.95	STD. DEV. OF COVARIANCE		1112.47
STD. DEV.	18.01	18.28	17.69	CORRELATION COEFFICIENT		-.128
KURTOSIS	9.08	9.82	9.09	VECTOR MEAN		52.88
SKEWNESS	-.33	-.20	.47	VECTOR VARIANCE		947.72
				STD. DEV.		18.65

UNITS OF RAW DATA VARIABLES = MM/SEC

SAMPLE SIZE = 1936 POINTS

*** TEMPERATURE ***
*** DEGREES C. ***

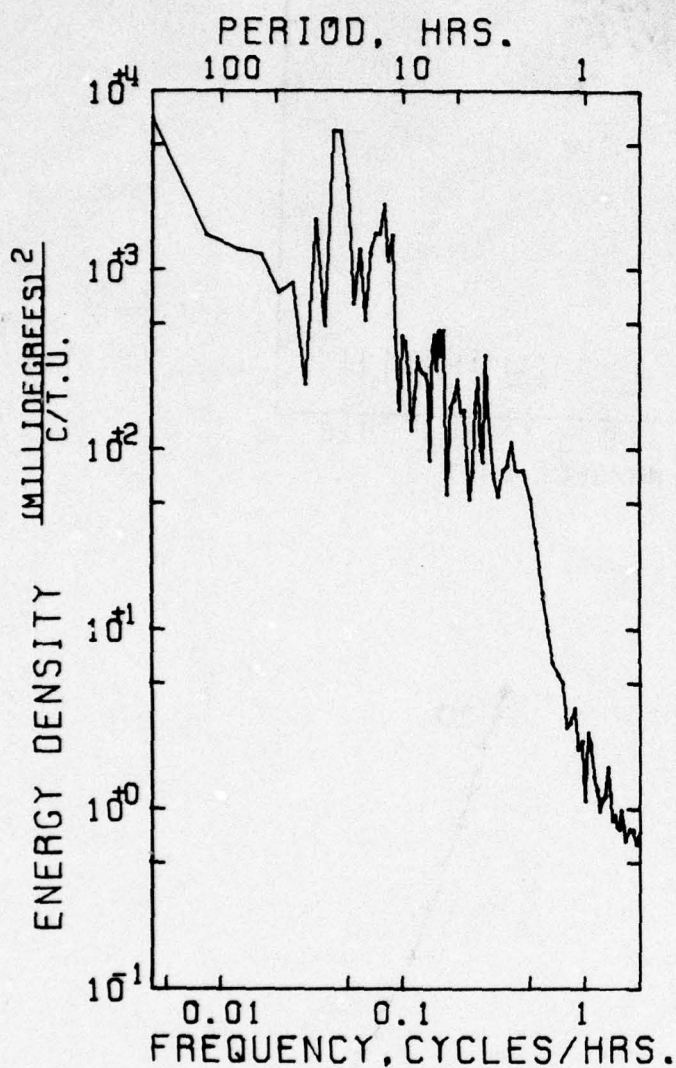
SPANNING RANGE

FROM 73- IV -01 01.07.30
TO 73- IV -21 04.52.30

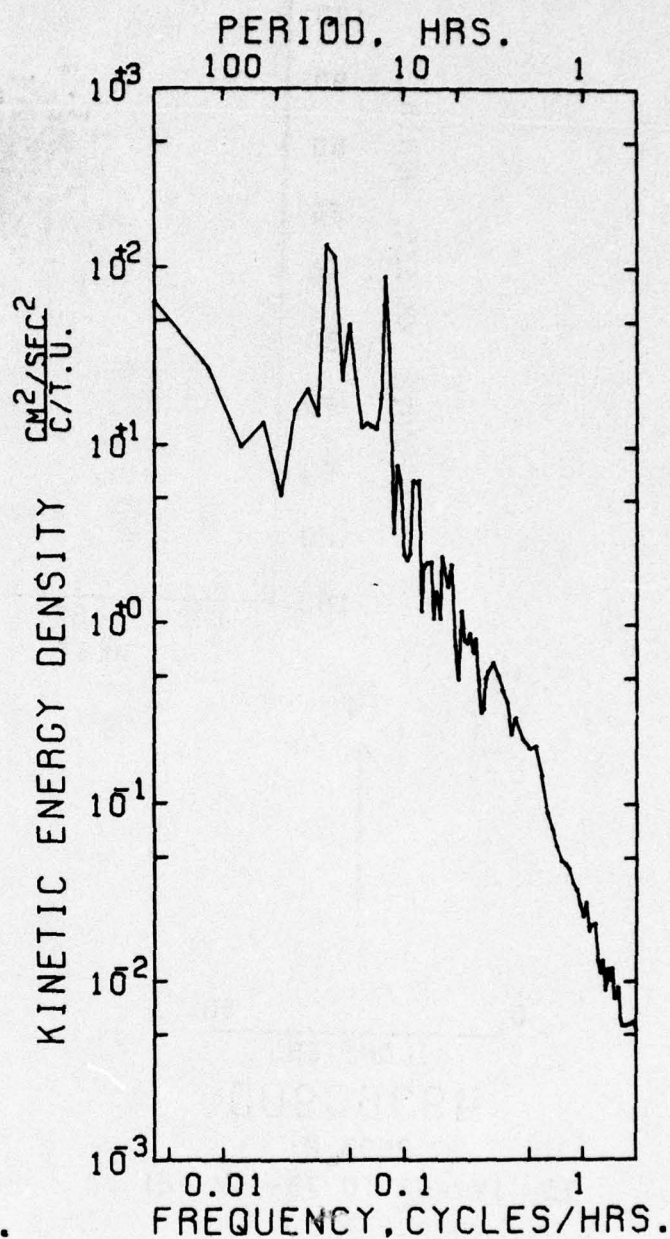
DURATION 20 DAYS 3 H 45 M

MEAN	2.750	STD ERR	.000
VARIANCE	.000		
STD. DEV.	.016		
KURTOSIS	5.658		
SKEWNESS	.718		

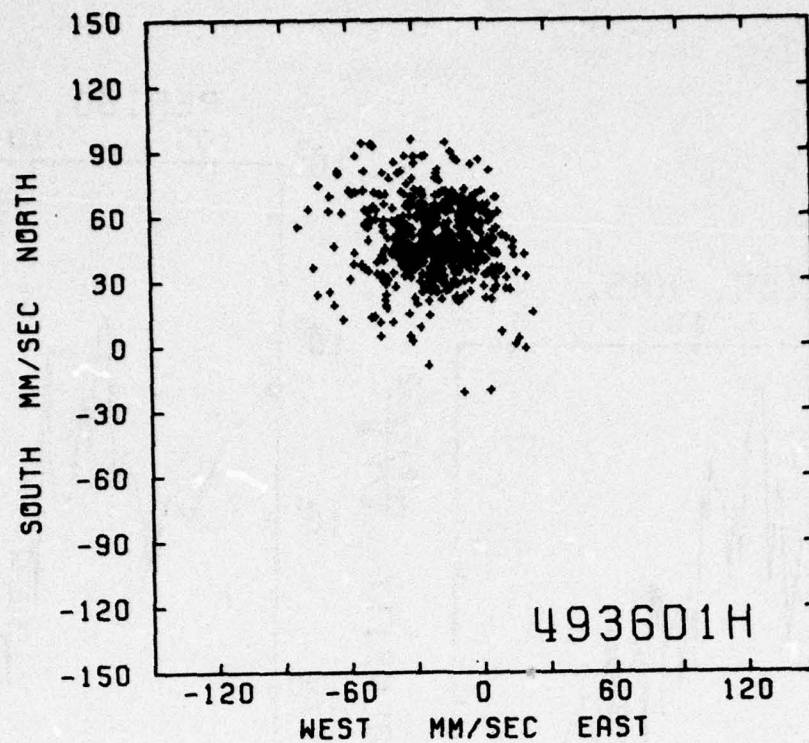
SAMPLE SIZE = 1936 POINTS



AUTO SPECTRUM
4936D900 TEMPERATURE
2933 METERS
73-IV-01 TO 73-IV-20
1 PIECES WITH 960 ESTIMATES
PER PIECE. AVERAGED OVER
2 ADJACENT FREQUENCY BANDS



AUTO SPECTRUM
4936D900 EAST
4936D900 NORTH
2933 METERS
73-IV-01 TO 73-IV-21
1 PIECES WITH 960 ESTIMATES
PER PIECE. AVERAGED OVER
2 ADJACENT FREQUENCY BANDS

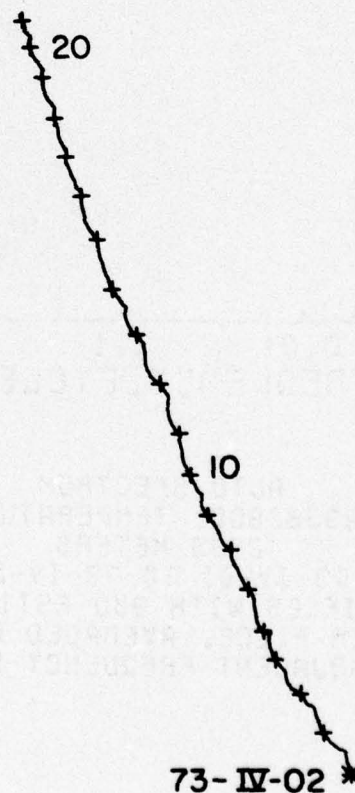


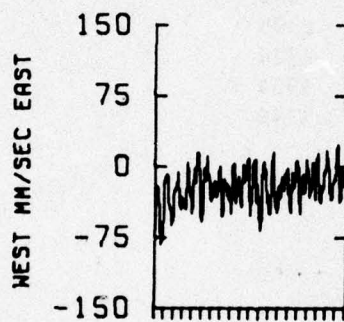
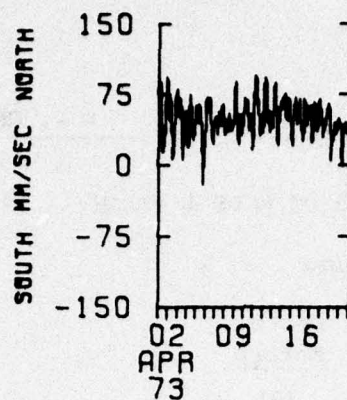
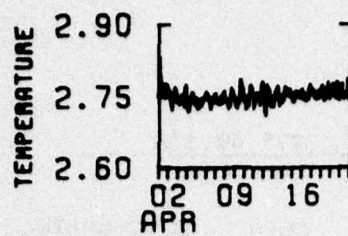
0. 30.
KILOMETERS

49360900

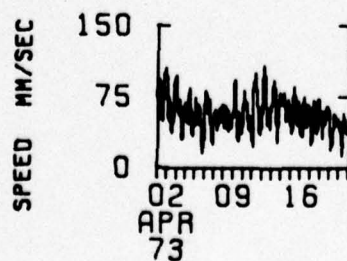
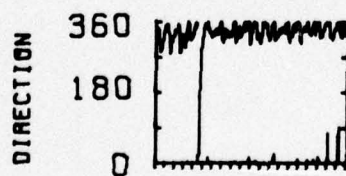
2933 M

73- IV -02 TO 73- IV -21





4936D1H
2933 M



Mooring No. 494

Set 1973 April 1
Year Month Day

27° 49.3'N
Latitude

70° 39.8'W
Longitude

Set by J. Gifford - R. Heinmiller

Ship R.V. CHAIN

Cruise 112 Leg 2

Retrieved 1973 June 29
Year Month Day

Retrieved by J. Gifford - R. Heinmiller

Ship R.V. CHAIN

Cruise 112 Leg 6

Purpose of Mooring: Mooring #5 of MODE 1 array

Mooring Type: Subsurface mooring

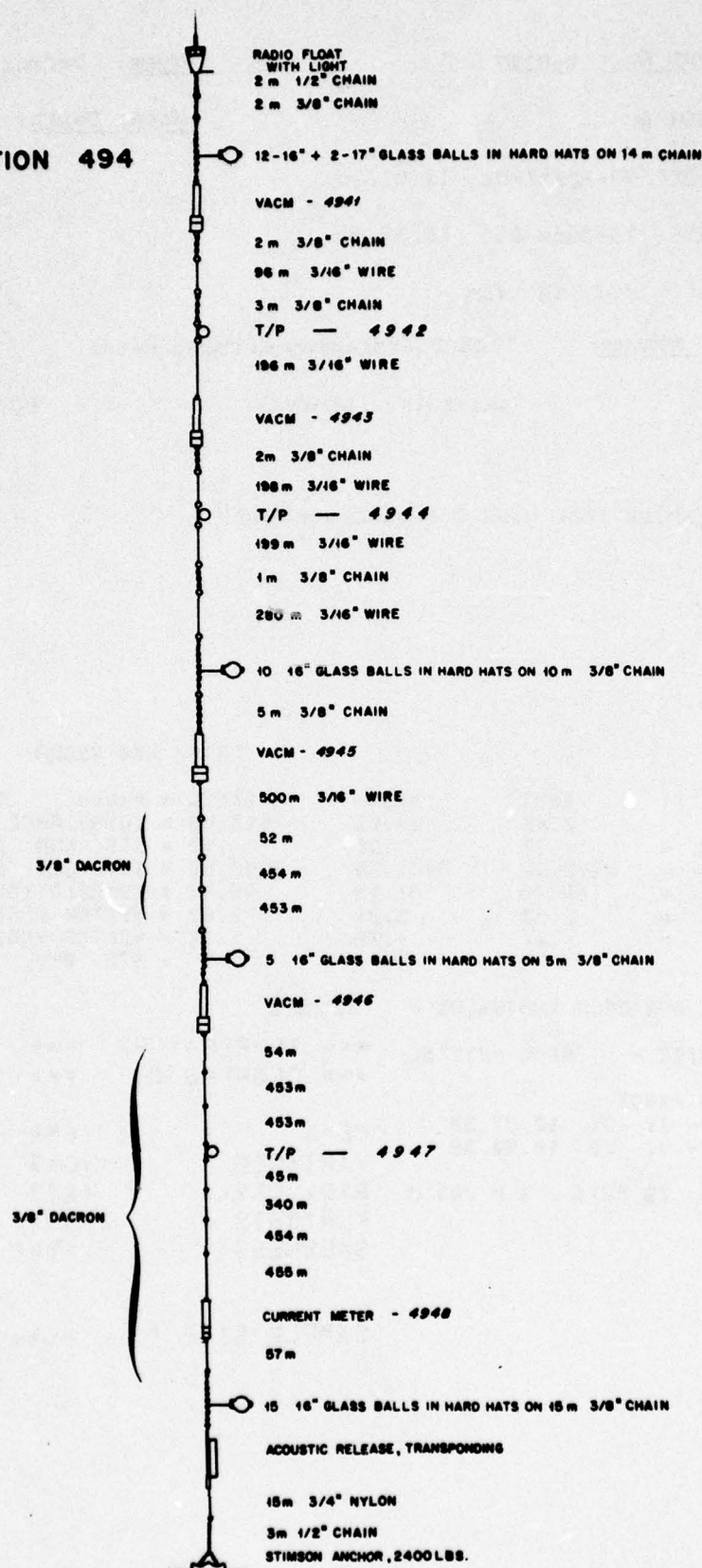
Key	Data Number	Instrument Number	Type	Depth Meters	Comments
*	4941	V-0127	VACM	391	
#	4942	#33	T/P	492	M.I.T.
	4943	V-0157	VACM	691	I.O.S.
#	4944	#51	T/P	893	M.I.T.
+	4945	V-0118	VACM	1395	
+	4946	V-0133	VACM	2924	
#	4947	#24	T/P	3954	M.I.T.
	4948	M-280	850	5346	U.R.I.

Water depth

5446

COMMENTS ON MOORING:

STATION 494



DATA NUMBER 4941

Instrument No.: V-0127

Type: Vector Averaging Current Meter

Depth: 391 m

Water Depth: 5446 m

Start time: 73-April-01 12.07.30.

Stop time: 73-June-28 16.52.30.

Duration: 88d 4h 45m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

All variables look good for entire record

STATS

DATA/ 48410900A

	EAST	NORTH	SPEED	*****	EAST & NORTH	*****
MEAN	8.43	48.82	113.46	*****	COVARIANCE	324.17
STD. ERR.	.72	.98	.53	*****	STD. ERR. OF COVARIANCE	70.78
VARIANCE	4448.79	8907.65	2448.90	*****	STD. DEV. OF COVARIANCE	8551.10
STD. DEV.	66.70	91.15	48.47	*****	CORRELATION COEFFICIENT	.053
KURTOSIS	2.83	2.29	2.52	*****	VECTOR MEAN	50.83
SKEWNESS	-.21	-.29	.24	*****	VECTOR VARIANCE	8378.22
				*****	STD. DEV.	78.86

UNITS OF RAW DATA VARIABLES = MM/SEC

SAMPLE SIZE = 8564 POINTS *** TEMPERATURE ***
*** DEGREES C. ***

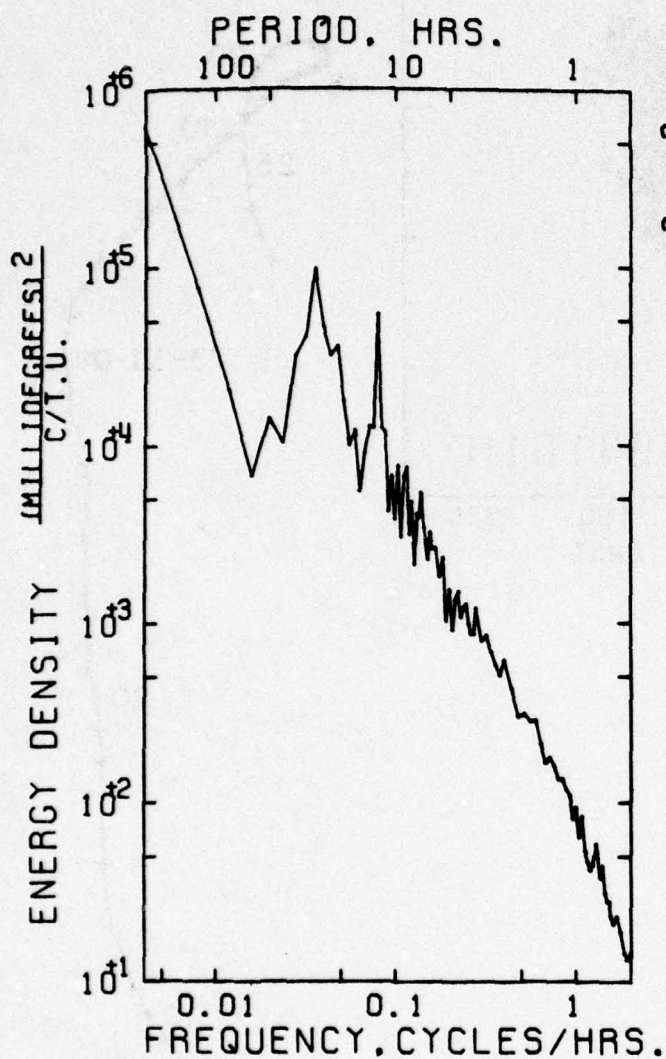
SPANNING RANGE

FROM 73- IV -01 12.07.30
TO 73- VI -28 16.52.30

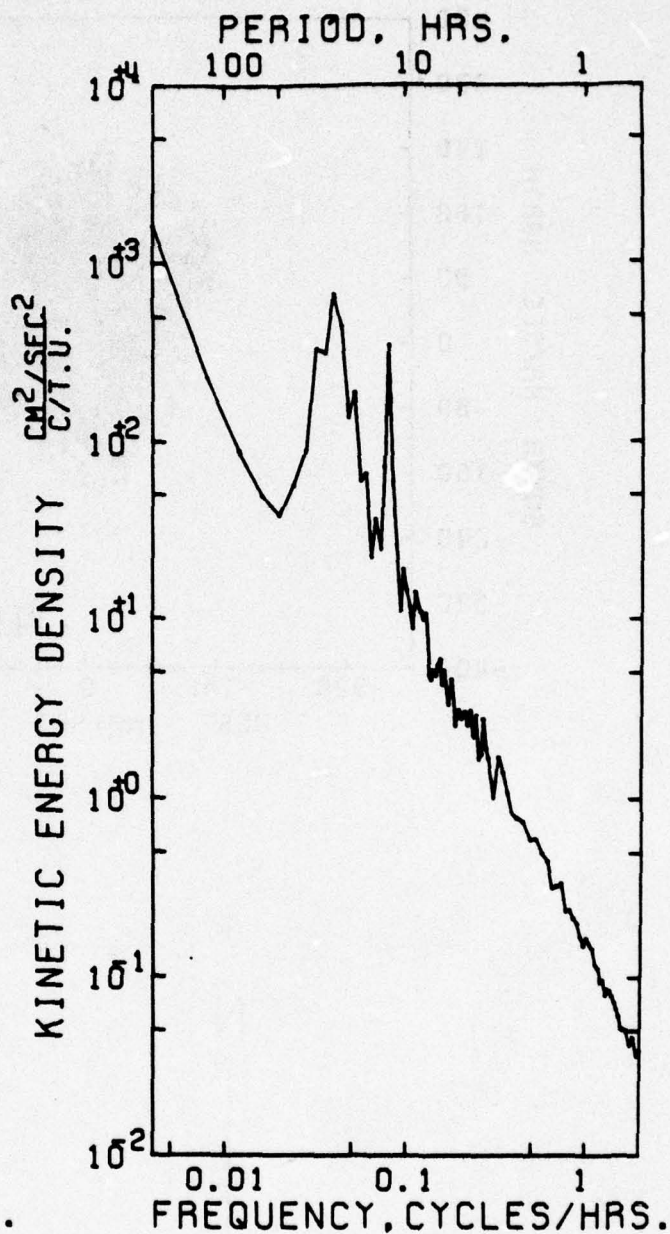
DURATION 88 DAYS 4 H 45 M

MEAN	17.654	STD ERR	.002
VARIANCE	.043		
STD. DEV.	.209		
KURTOSIS	2.367		
SKEWNESS	.542		

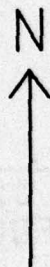
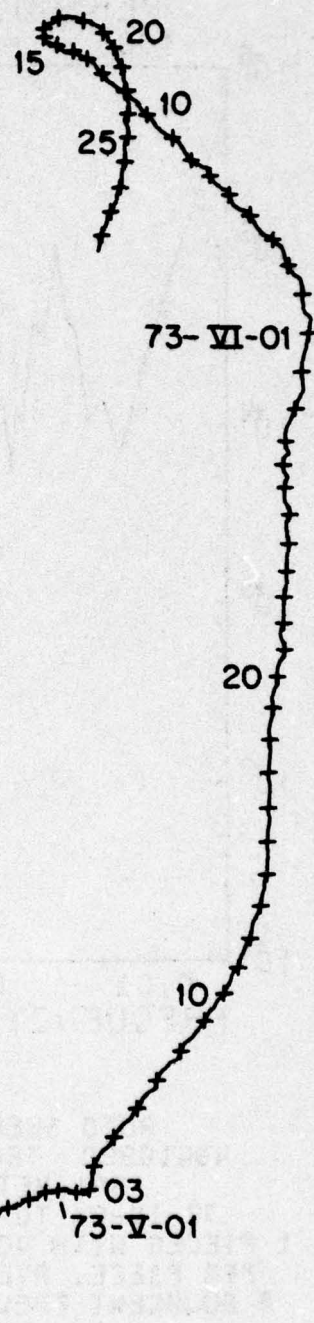
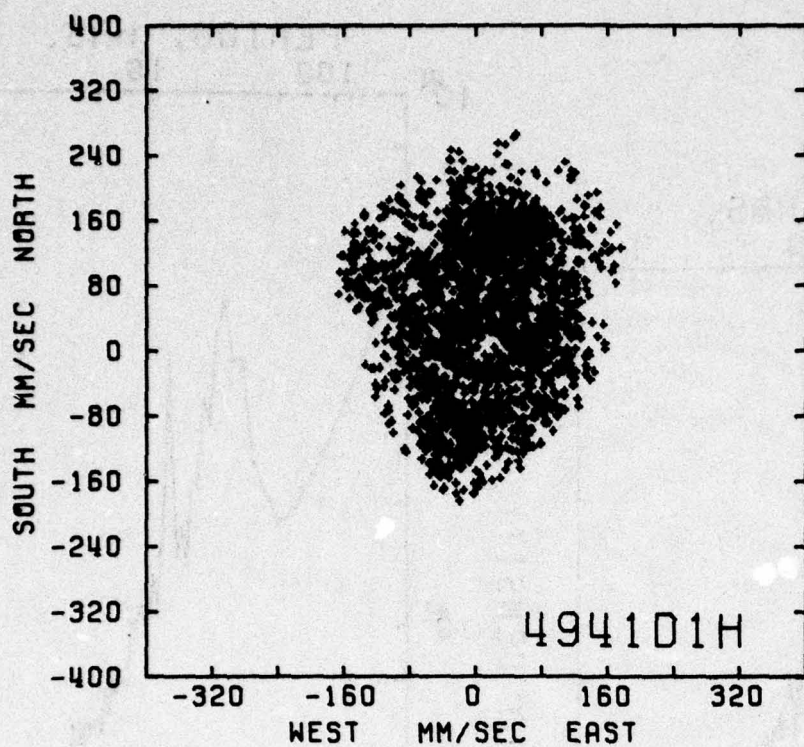
SAMPLE SIZE = 8564 POINTS



AUTO SPECTRUM
49410900 TEMPERATURE
391 METERS
73-IV-01 TO 73-VI-23
1 PIECES WITH 4000 ESTIMATES
PER PIECE. AVERAGED OVER
8 ADJACENT FREQUENCY BANDS



AUTO SPECTRUM
49410900 EAST
49410900 NORTH
391 METERS
73-IV-01 TO 73-VI-23
1 PIECES WITH 4000 ESTIMATES
PER PIECE. AVERAGED OVER
8 ADJACENT FREQUENCY BANDS



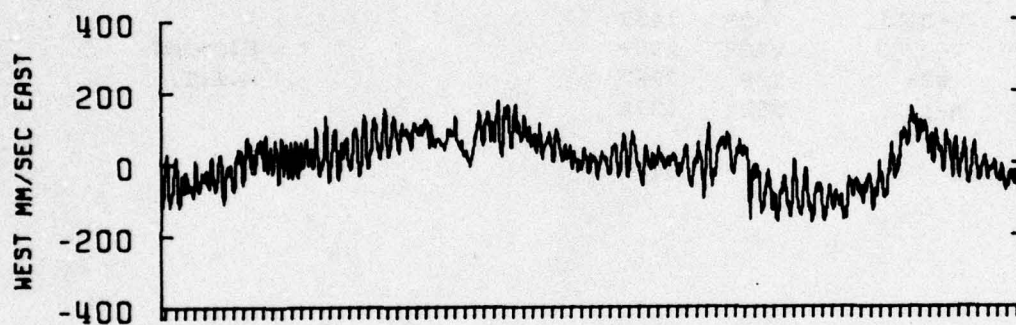
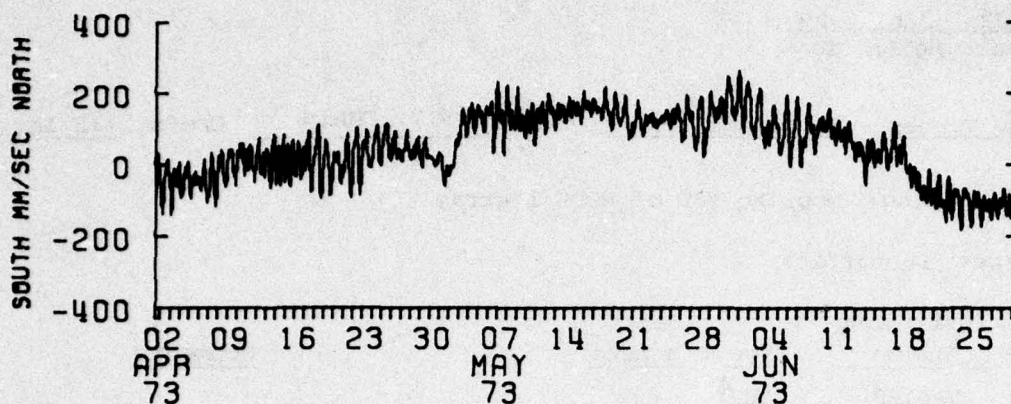
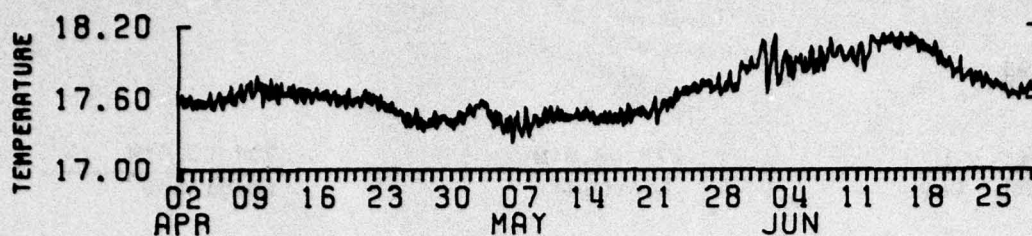
49410900

391 M

73- IV -02 TO 73- VI -29

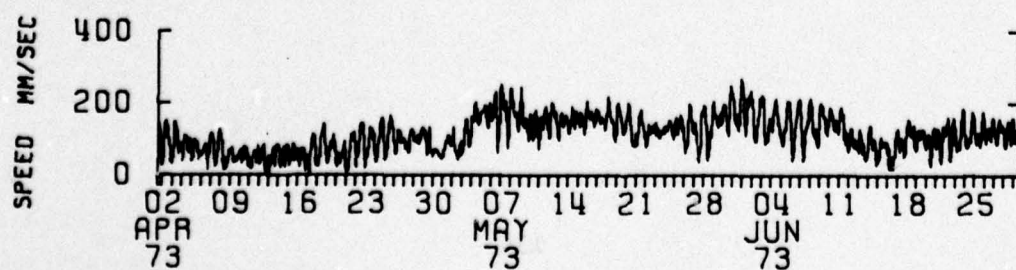
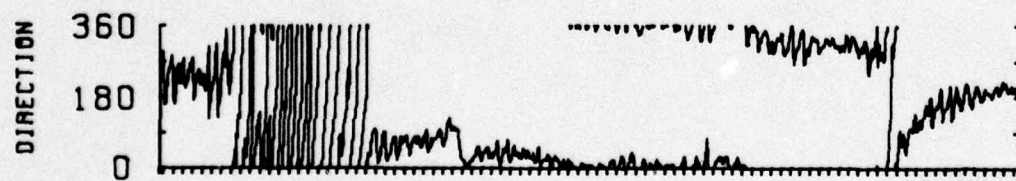
73-IV-02

03
73-V-01



4941D1H

391 M



Mooring No. 495

Set 1973 April 1 27° 08.8'N 70° 00.0'W
Year Month Day Latitude Longitude

Set by G. Tupper - R. Heinmiller Ship R.V. CHAIN Cruise 112 Leg 2

Retrieved 1973 June 29
Year Month Day

Retrieved by G. Tupper - R. Heinmiller Ship R.V. CHAIN Cruise 112 Leg 6

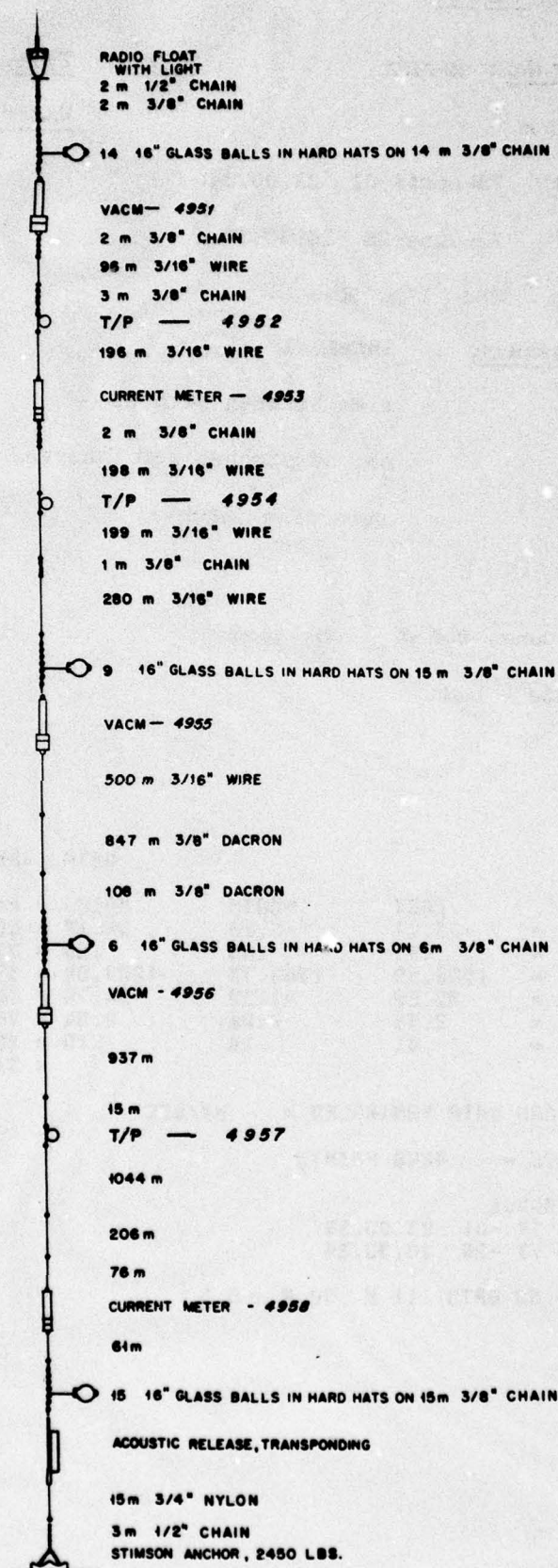
Purpose of Mooring: Mooring #10 of MODE 1 array

Mooring Type: Subsurface

Key	Data Number	Instrument Number	Type	Depth Meters	Comments
+	4951	V-0163	VACM	452	
#	4952	#38	T/P	554	M.I.T.
*	4953	M-212t	850t	753	Bad temperature data
	4954	#56	T/P	854	M.I.T.
*	4955	V-0105	VACM	1452	
	4956	V-0203	VACM	2959	Flooded
#	4957	#26	T/P	3962	M.I.T.
+	4958	M-122t	850t	5374	
	Water depth			5477	

COMMENTS ON MOORING:

STATION 495



DATA NUMBER 4953

Instrument No.: M-212t

Type: Magnetic Tape Recording Current Meter

Depth: 753 m

Water depth: 5477 m

Start time: 73-April-01 23.00.34.

Stop time: 73-June-28 10.30.34.

Duration: 88d 11h 30m

Sampling scheme: Interval

time between strobes = seconds

no. of strobes per interval = 13

recording interval = 1800 seconds

COMMENTS:

Compass, vane, speed - look good

Temperature - bad

STATS

DATA/ 4953F1800A

	EAST	NORTH	SPEED	EAST & NORTH	
MEAN	-83.47	-5.29	94.12		-7.83
STD. ERR.	.57	.63	.53		57.87
VARIANCE	1986.33	1704.72	1207.04		3772.06
STD. DEV.	98.98	41.29	94.74		61.42
KURTOSIS	2.98	2.98	2.94		83.83
SKEWNESS	.01	.14	.10		1535.59
					39.19

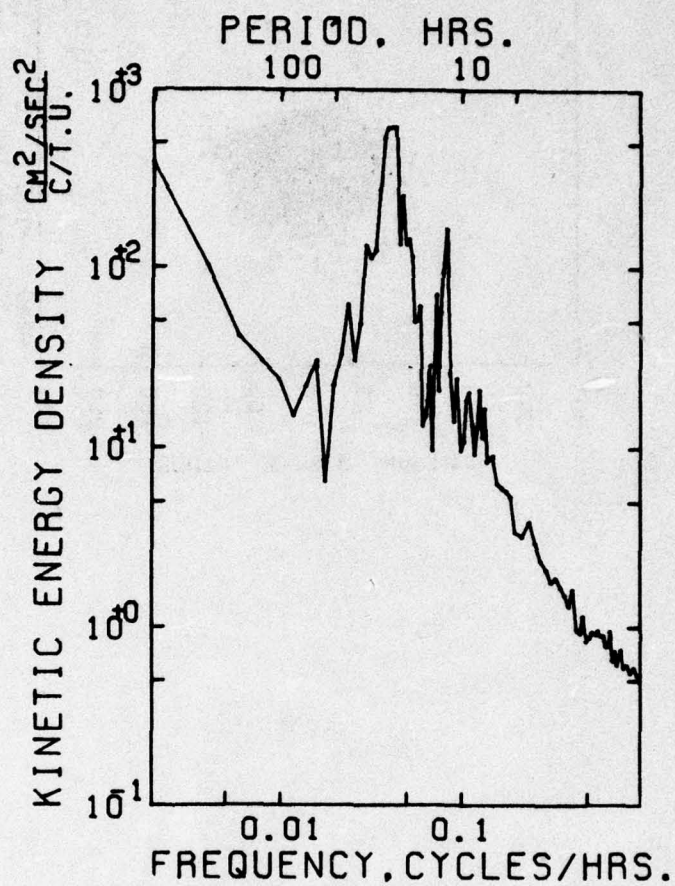
UNITS OF RAW DATA VARIABLES = MM/SEC

SAMPLE SIZE = 4248 POINTS

SPANNING RANGE

FROM 73- IV -01 23.00.34
TO 73- VI -28 10.30.34

DURATION 88 DAYS 11 H 30 M 0 S



AUTO SPECTRUM
4953F1800 EAST
4953F1800 NORTH
753 METERS
73-IV-01 TO 73-VI-26
1 PIECES WITH 2048 ESTIMATES
PER PIECE. AVERAGED OVER
4 ADJACENT FREQUENCY BANDS

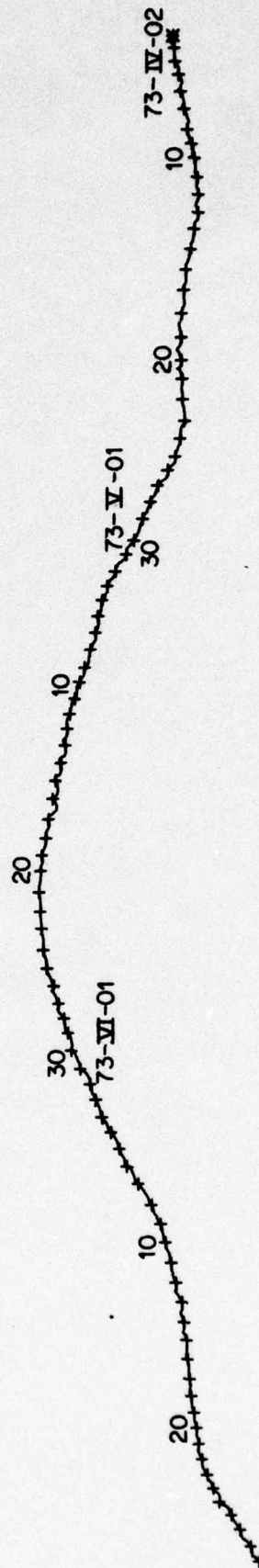
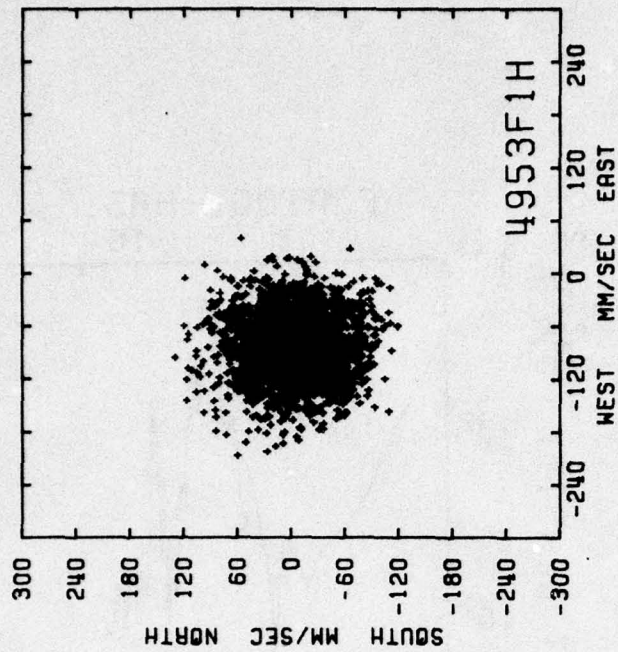
N ↑

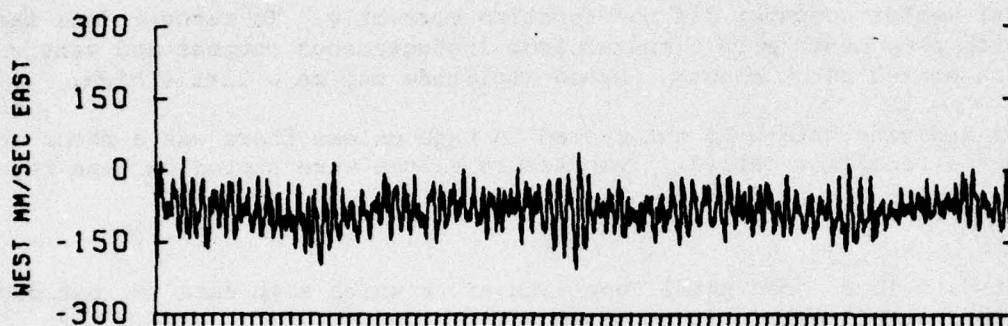
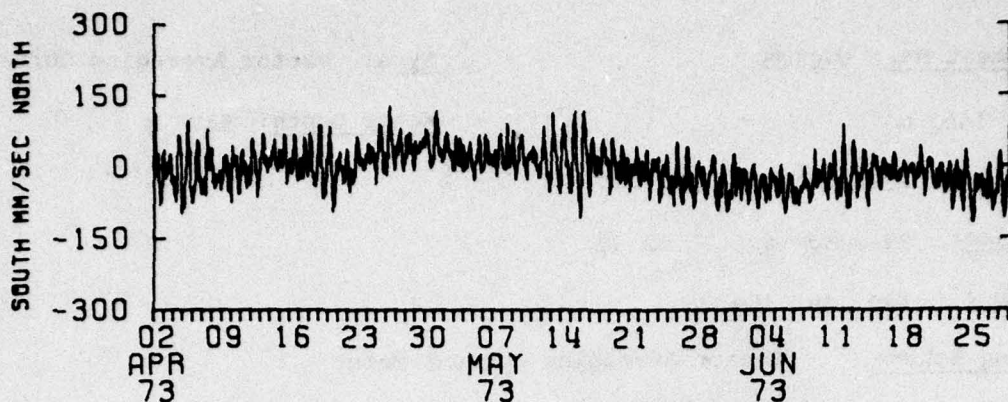
0 100.
KILOMETERS

4953F1800

753 M

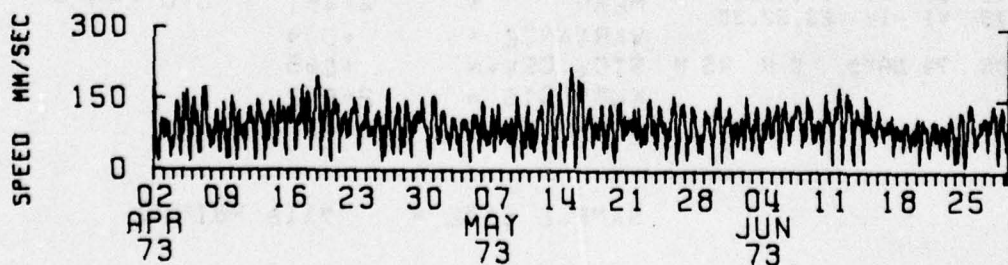
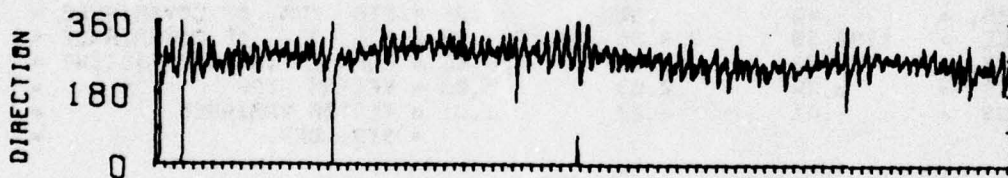
73- IV -02 TO 73- VI -29





4953F1H

753 M



DATA NUMBER 4955

Instrument No.: V-0105

Type: Vector Averaging Current Meter

Depth: 1452 m

Water Depth: 5477 m

Start time: 73-April-01 21.07.30.

Stop time: 73-June-14 23.52.30.

Duration: 74d 2h 45m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

Internal vector computer did not function correctly. To recover data East and North components were computed from instantaneous compass and vane values and accumulated rotor counts. Speed amplitude may be a little high.

Compass and vane data were not stored on tape unless there was a rotor count during the recording period. Temperature values were stored on tape regardless of rotor value.

1.

Current data looks good until June 15th after which some data is lost due to speed being at threshold (0 rotor count).

STATS

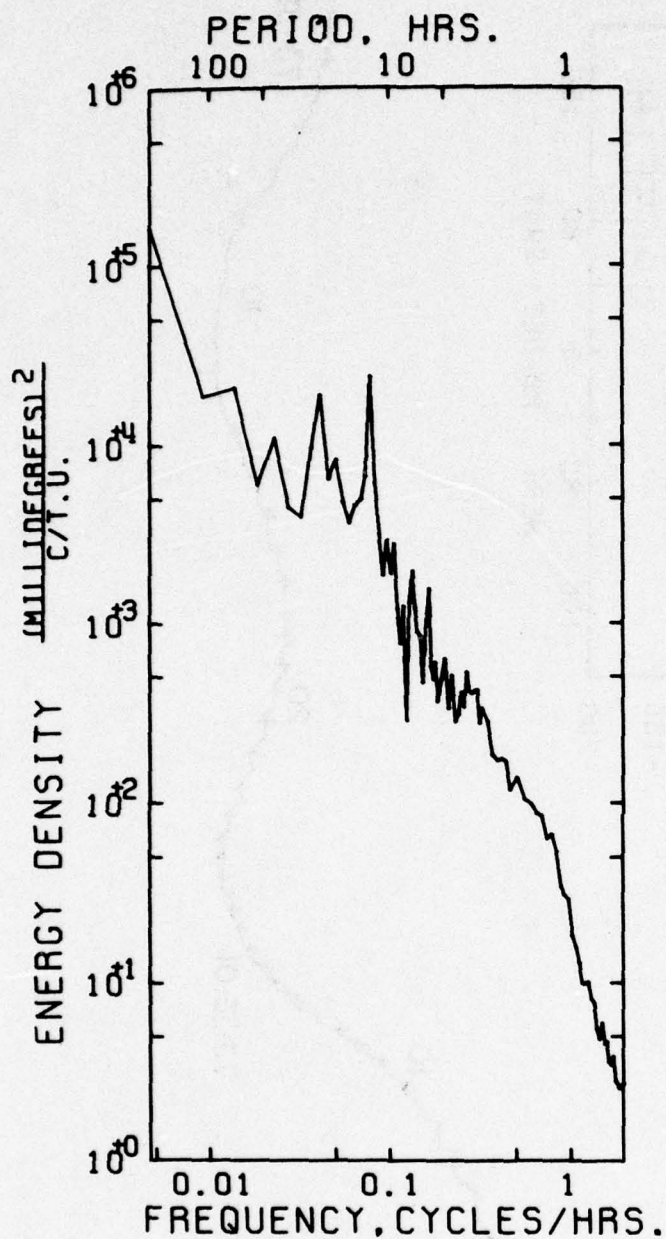
DATA/ 4955E900A

	EAST	NORTH	SPEED	*****	EAST & NORTH	*****
MEAN	= -33.65	0.30	49.47	* COVARIANCE	=	119.75
STD. ERR.	= .40	.34	.31	* STD. ERR. OF COVARIANCE	=	17.62
VARIANCE	= 1139.69	808.30	701.30	* STD. DEV. OF COVARIANCE	=	1486.49
STD. DEV.	= 33.76	28.40	26.40	* CORRELATION COEFFICIENT	=	.125
KURTOSIS	= 3.24	2.93	3.86	* VECTOR MEAN	=	34.68
SKEWNESS	= -.41	-.23	1.01	* VECTOR VARIANCE	=	979.04
				* STD. DEV.	=	31.19

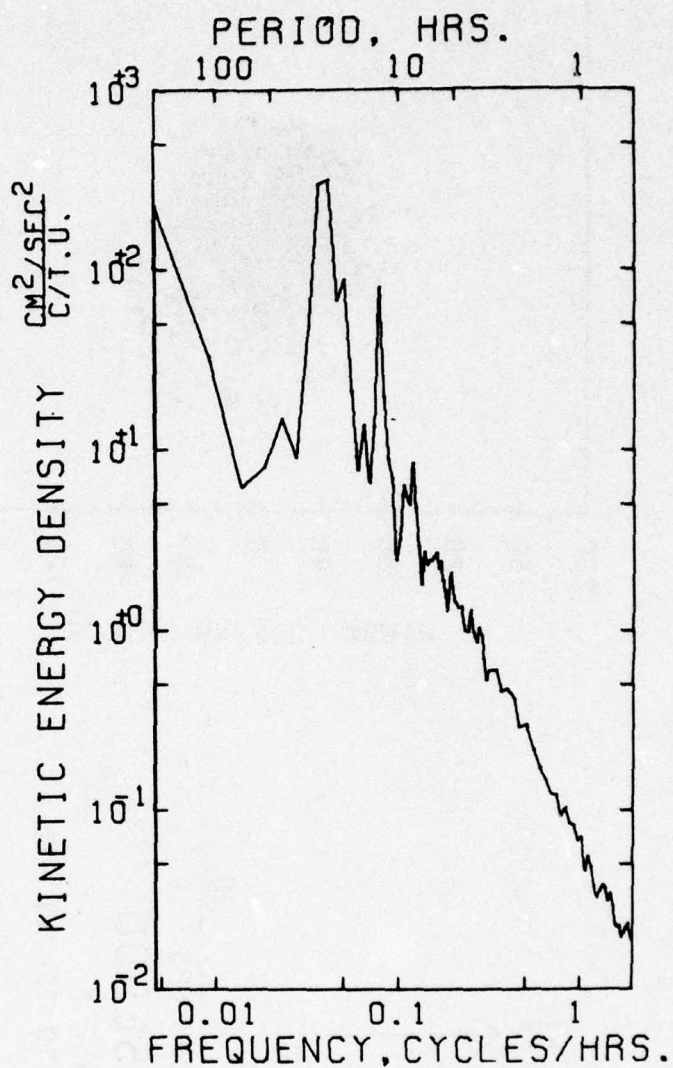
UNITS OF RAW DATA VARIABLES = MM/SEC

SAMPLE SIZE =	7116 POINTS	*** TEMPERATURE ***	
		*** DEGREES C. ***	
SPANNING RANGE			
FROM	73- IV -01 21.07.30	MEAN	= 4.451
TO	73- VI -14 23.52.30	VARIANCE	= .004
		STD. DEV.	= .065
		KURTOSIS	= 2.572
		SKEWNESS	= .273

SAMPLE SIZE = 7116 POINTS



AUTO SPECTRUM
4955E900 TEMPERATURE
1452 METERS
73-IV-01 TO 73-VI-11
1 PIECES WITH 3456 ESTIMATES
PER PIECE. AVERAGED OVER
8 ADJACENT FREQUENCY BANDS



AUTO SPECTRUM
4955E900 EAST
4955E900 NORTH
1452 METERS
73-IV-01 TO 73-VI-12
1 PIECES WITH 3456 ESTIMATES
PER PIECE. AVERAGED OVER
8 ADJACENT FREQUENCY BANDS

N

0 40
KILOMETERS

4955E900

1452 M

73- IV -02 TO 73- VI -14

14

73-VI-01

20

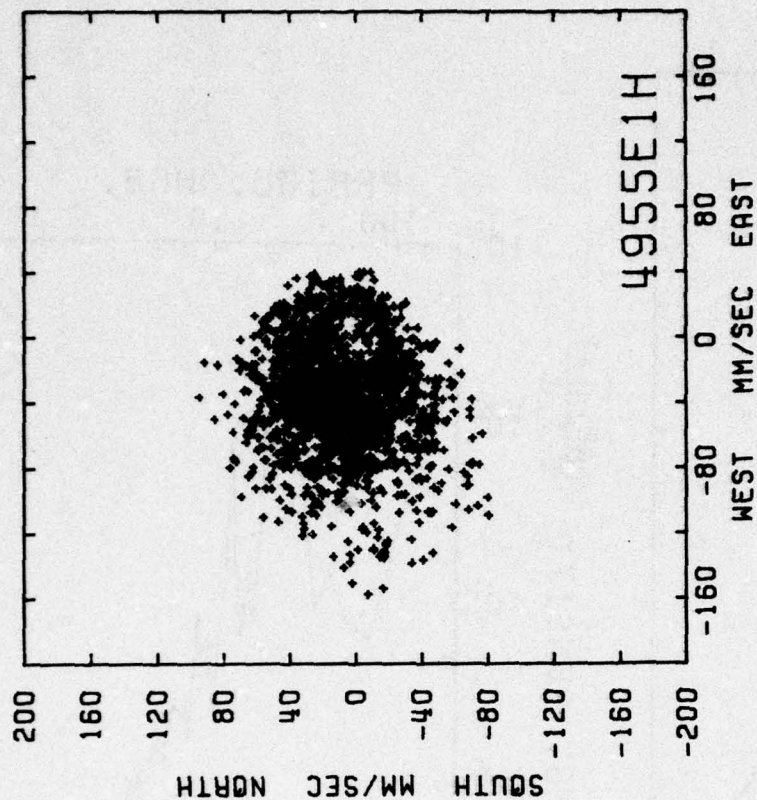
10

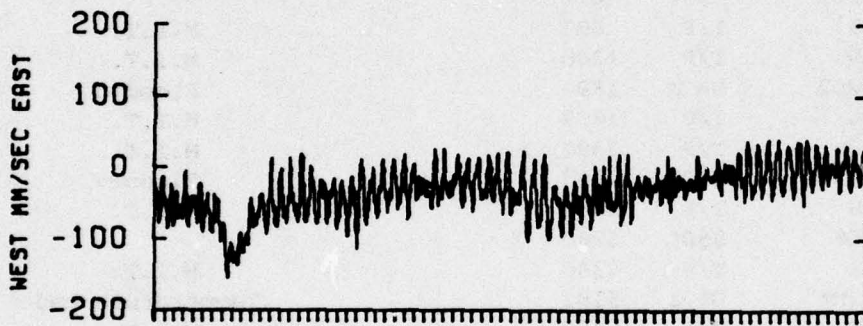
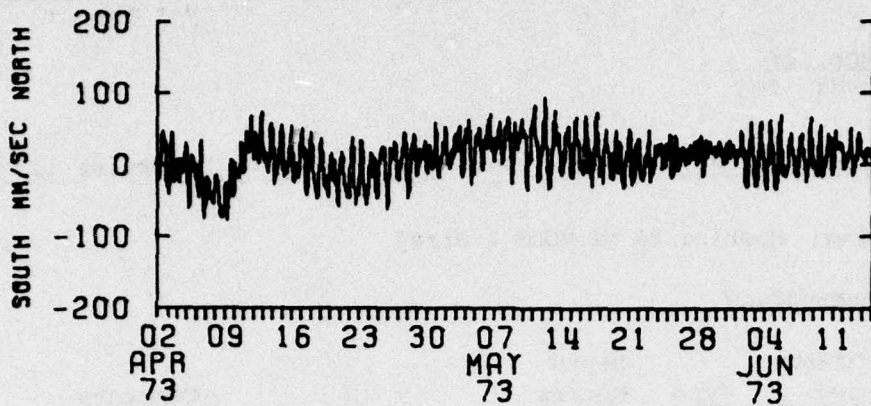
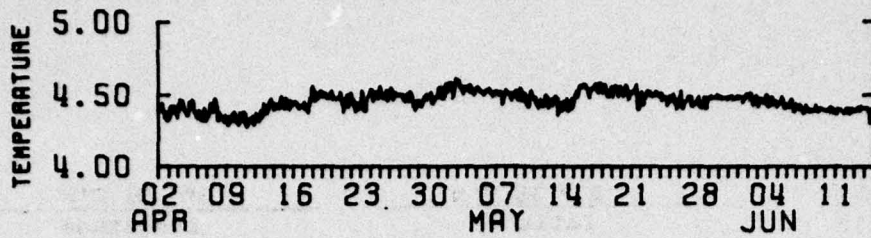
73-V-01

20

10

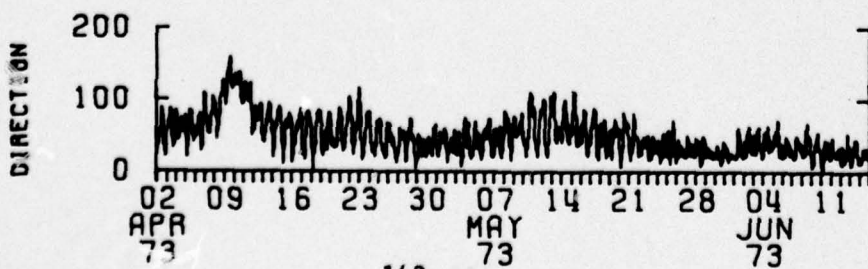
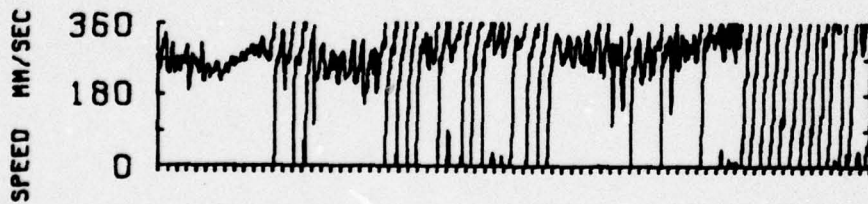
73-IV-02





4955E1H

1452 M



Mooring No. 497

Set 1973 April 2 27° 18.0'N 69° 01.0'W
Year Month Day Latitude Longitude

Set by G. Tupper - R. Heinmiller Ship R.V. CHAIN Cruise 112 Leg 2

Retrieved 1973 June 28
Year Month Day

Retrieved by J. Gifford - R. Heinmiller Ship R.V. CHAIN Cruise 112 Leg 6

Purpose of Mooring: Mooring #9 of MODE 1 array

Mooring Type: Subsurface

Key	Data Number	Instrument Number	Type	Depth Meters	Comments
*	4971	V-0120	VACM	374	
#	4972	#37	T/P	478	M.I.T.
+	4973	M-213t	850t	676	
#	4974	#55	T/P	880	M.I.T.
#	4975	#59	T/P	1080	M.I.T.
	4976	V-0202	VACM	1380	Flooded
	4977	#06	T/P	1889	M.I.T.
#	4978	#18	T/P	2392	M.I.T.
	4979	V-0196	VACM	2913	Flooded
#	497,10	#08	T/P	3433	M.I.T.
*	497,11	M-206	850t	3940	
#	497,12	#31	T/P	4346	M.I.T.
*	497,13	M-129t	850t	5182	Temperature bad
#	497,14	#09	T/P	5185	M.I.T.
	Water depth			5296	

COMMENTS ON MOORING:

STATION 497

RADIO FLOAT
WITH LIGHT
2 m 1/2" CHAIN
2 m 3/8" CHAIN

13 17" GLASS BALLS IN HARD HATS ON 13 m 3/8" CHAIN

VACM — 4971

2 m 3/8" CHAIN

96 m 3/16" WIRE

3 m 3/8" CHAIN

T/P — 4972

196 m 3/16" WIRE

CURRENT METER — 4973

2 m 3/8" CHAIN

198 m

T/P — 4974

199 m

T/P — 4975

280 m

8 17" GLASS BALLS IN HARD HATS ON 15 m 3/8" CHAIN

VACM — 4976

500 m

T/P — 4977

456 m 3/8" DACRON

(CONTINUED)

3/16" WIRE

3/8" DACRON

23 m
T/P — 4978

455 m

11 m

16 m

8 17" GLASS BALLS IN HARD HATS ON 8 m 3/8" CHAIN

VACM — 4979

455 m

11 m

11 m

T/P — 497,10

457 m

10 m

8 m

CURRENT METER — 497,11

379 m

T/P — 497,12

456 m

316 m

CURRENT METER — 497,13

2 m 1/2" DACRON

T/P — 497,14

57 m 3/8" DACRON

15 17" GLASS BALLS IN HARD HATS ON 15 m 3/8" CHAIN

ACOUSTIC RELEASE, TRANSDUCING

20 m 3/4" NYLON

3 m 1/2" CHAIN

STIMSON ANCHOR, 2400 LBS.

DATA NUMBER 4971

Instrument No.: V-0120

Type: Vector Averaging Current Meter

Depth: 374 m

Water Depth: 5296 m

Start time: 73-April-03 01.07.30.

Stop time: 73-June-11 01.52.30.

Duration: 68d 0h 45m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

Compass - good

Vane - good

Rotor - threshold problems from June 11 to end

Temperature - good

STATS

DATA/ 4971C900A

	EAST	NORTH	SPEED	EAST & NORTH	
MEAN	-80.72	-41.50	106.68		
STD. ERR.	.64	.58	.52		
VARIANCE	2708.10	2203.77	1789.85		
STD. DEV.	52.04	46.94	42.07		
KURTOSIS	2.25	2.55	2.53		
SKEWNESS	-.07	.15	-.09		
				COVARIANCE	-784.54
				STD. ERR. OF COVARIANCE	54.17
				STD. DEV. OF COVARIANCE	4409.84
				CORRELATION COEFFICIENT	-.325
				VECTOR MEAN	90.78
				VECTOR VARIANCE	2455.94
				STD. DEV.	49.56

UNITS OF RAW DATA VARIABLES = MM/SEC

SAMPLE SIZE = 6628 POINTS *** TEMPERATURE ***
*** DEGREES C. ***

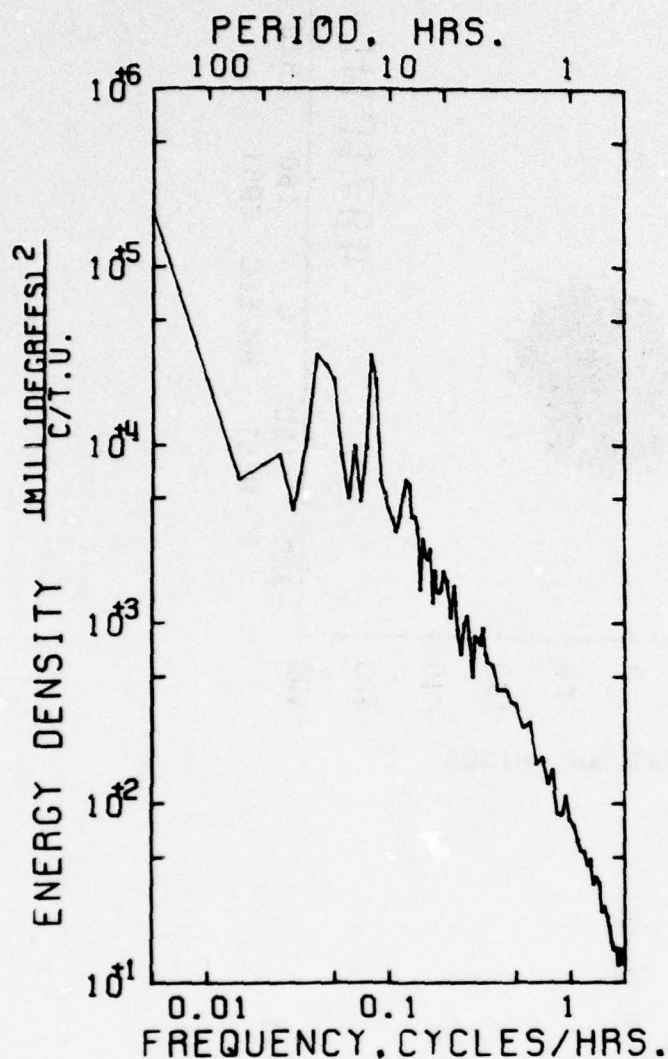
SPANNING RANGE

FROM 73- IV -03 01.07.30
TO 73- VI -11 01.52.30

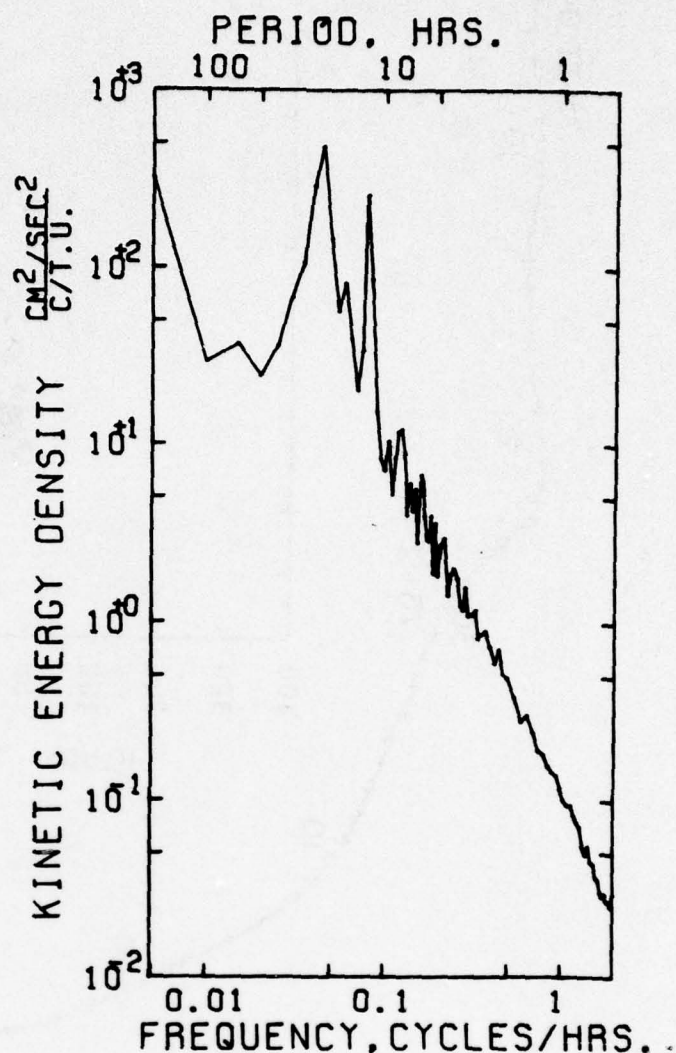
DURATION 68 DAYS 0 H 45 M

MEAN	17.449	STD ERR	.002
VARIANCE	.015		
STD. DEV.	.124		
KURTOSIS	2.149		
SKEWNESS	-.177		

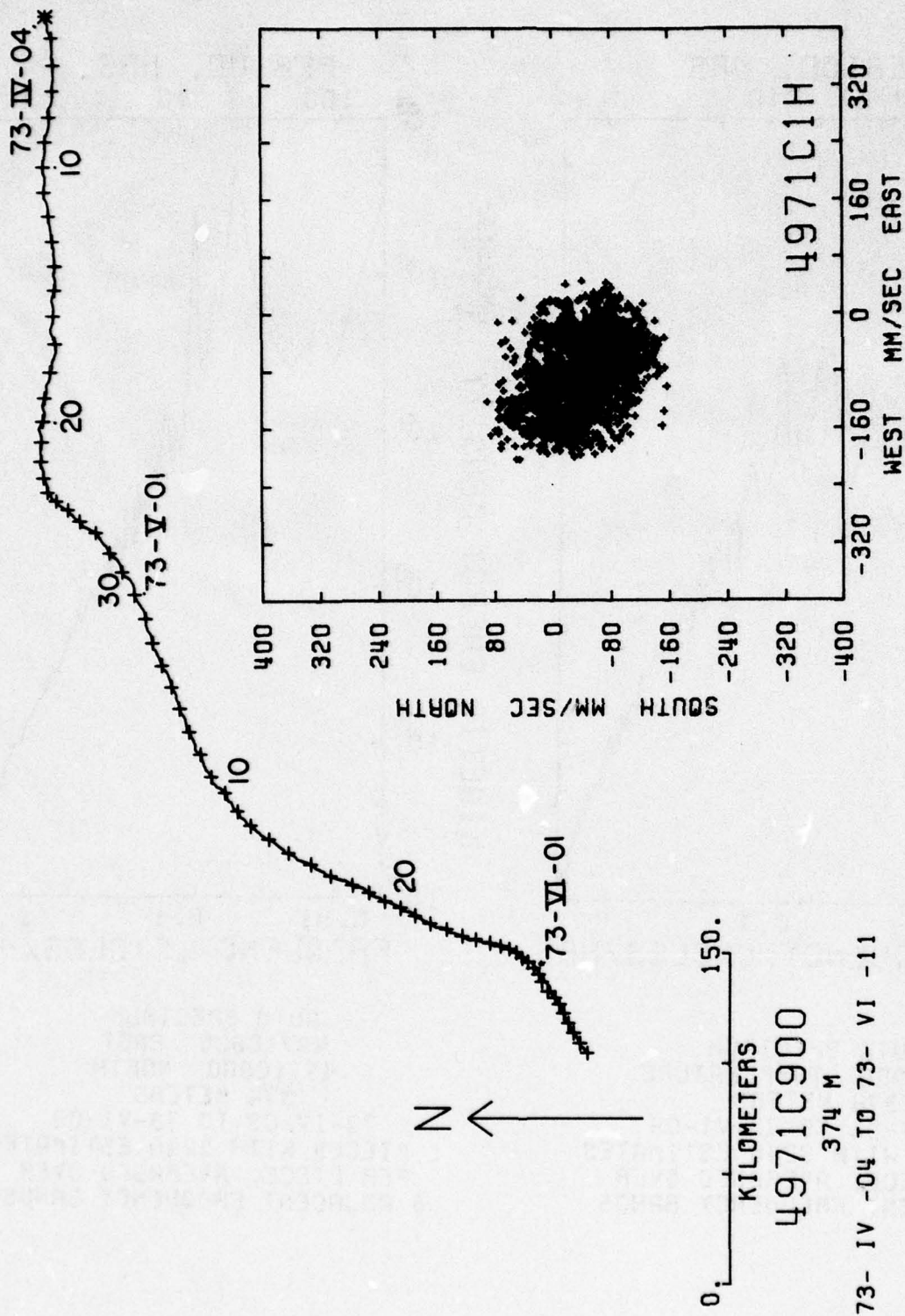
SAMPLE SIZE = 6628 POINTS

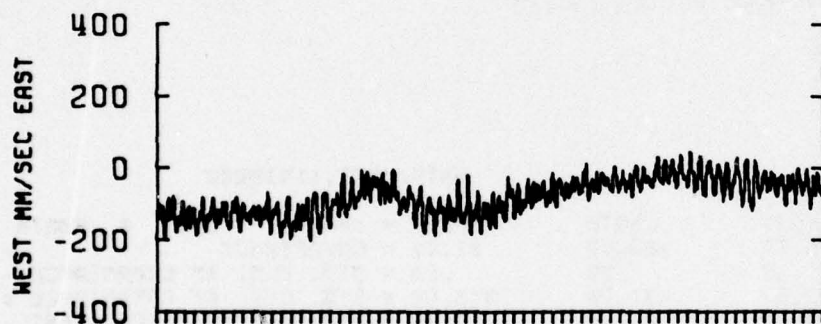
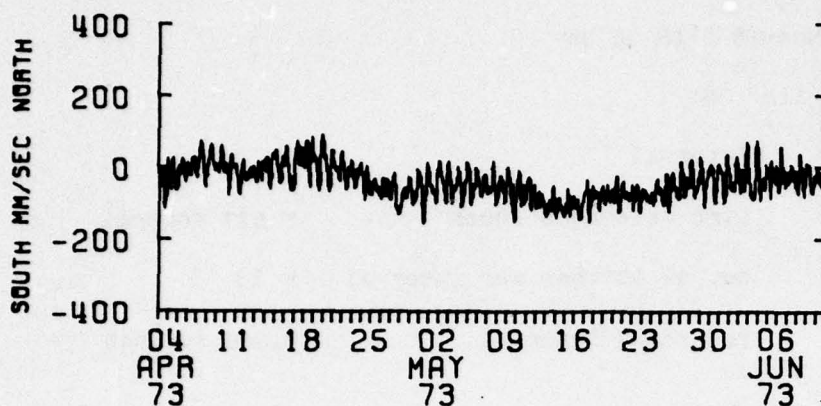
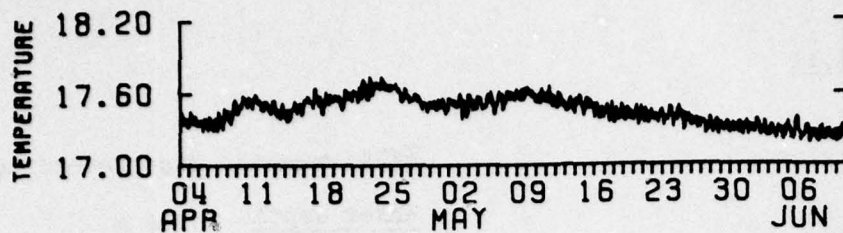


AUTO SPECTRUM
4971C900 TEMPERATURE
374 METERS
73-IV-03 TO 73-VI-09
1 PIECES WITH 3240 ESTIMATES
PER PIECE. AVERAGED OVER
8 ADJACENT FREQUENCY BANDS

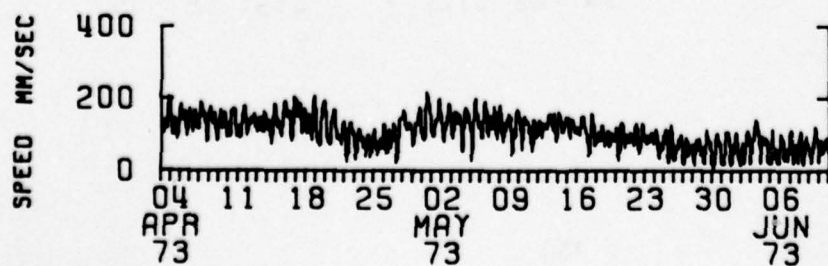
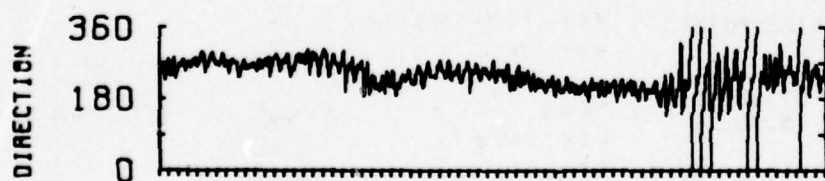


AUTO SPECTRUM
4971C900 EAST
4971C900 NORTH
374 METERS
73-IV-03 TO 73-VI-09
1 PIECES WITH 3240 ESTIMATES
PER PIECE. AVERAGED OVER
8 ADJACENT FREQUENCY BANDS





4971C1H
374 M



DATA NUMBER 497,11

Instrument No.: M-206t

Type: Magnetic Tape Recording Current Meter

Depth: 3940 m

Water depth: 5296 m

Start time: 73-April-03 07.00.34.

Stop time: 73-June-28 18.30.34.

Duration: 86d 11h 30m

Sampling scheme: Interval

time between strobes = 527 seconds

no. of strobes per interval = 13

recording interval = 1800 seconds

COMMENTS:

Vane out of top bearing at recovery. May have occurred during recovery.

All variables look good entire record

STATS

DATA/ 497.11K1800A

	EAST	NORTH	SPEED	EAST & NORTH	
MEAN	-5.67	-20.17	31.44		197.62
STD. ERR.	.32	.32	.28		11.87
VARIANCE	433.87	431.78	318.09		752.17
STD. DEV.	20.83	20.78	17.78		.457
KURTOSIS	9.15	4.05	4.98		20.85
SKEWNESS	-.32	-.48	1.45		432.83
					20.80

UNITS OF RAW DATA VARIABLES = MM/SEC

SAMPLE SIZE = 4152 POINTS *** TEMPERATURE ***
*** DEGREES C. ***

SPANNING RANGE

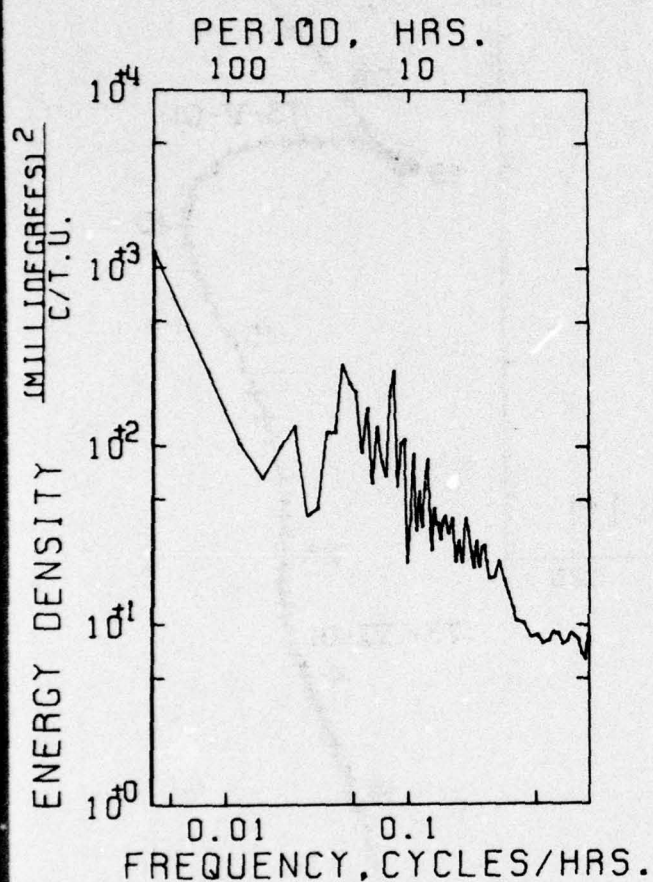
FROM 73- IV -03 07.00.34

TO 73- VI -28 18.30.34

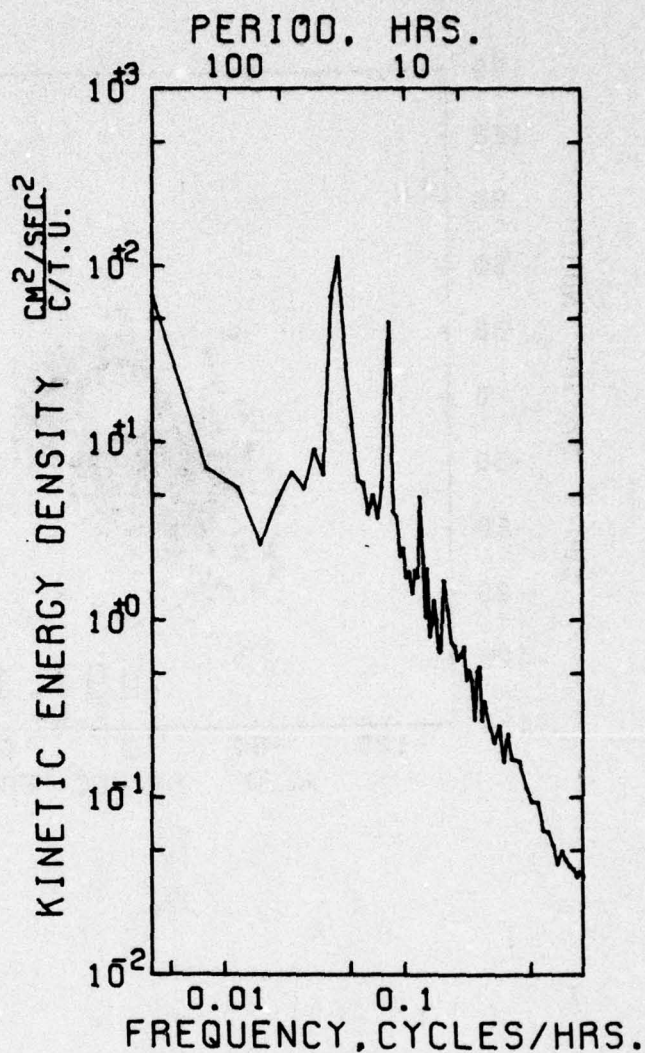
DURATION 86 DAYS 11 H 30 M

MEAN	=	2.345	STD ERR	=	.000
VARIANCE	=	.000			
STD. DEV.	=	.011			
KURTOSIS	=	2.100			
SKEWNESS	=	.160			

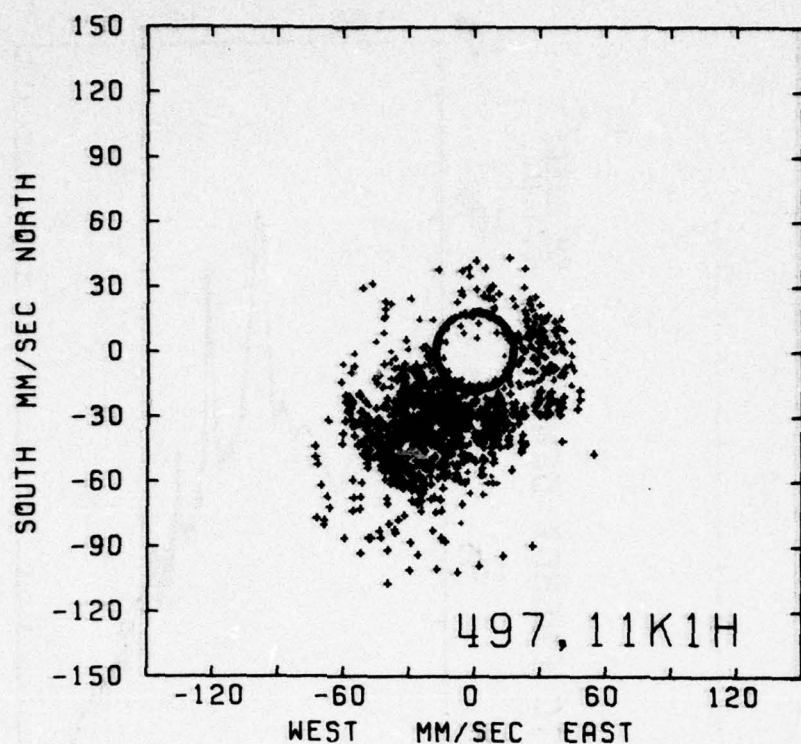
SAMPLE SIZE = 4152 POINTS



AUTO SPECTRUM
 497.11K1800 TEMPERATURE
 3940 METERS
 73-IV-03 TO 73-VI-27
 1 PIECES WITH 2048 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS



AUTO SPECTRUM
 497.11K1800 EAST
 497.11K1800 NORTH
 3940 METERS
 73-IV-03 TO 73-VI-27
 1 PIECES WITH 2048 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS

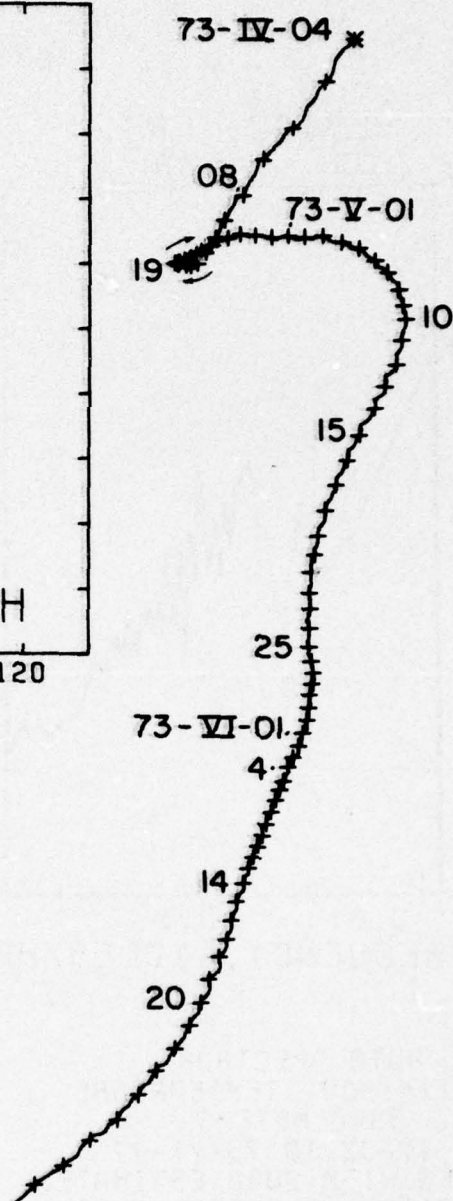


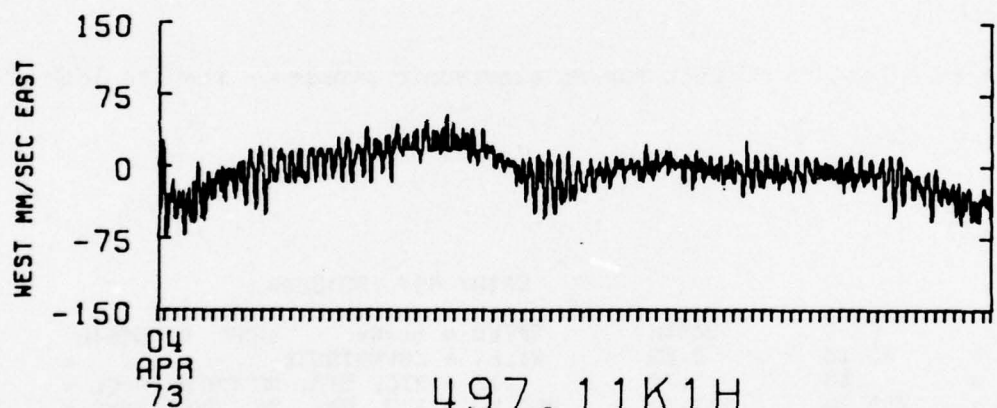
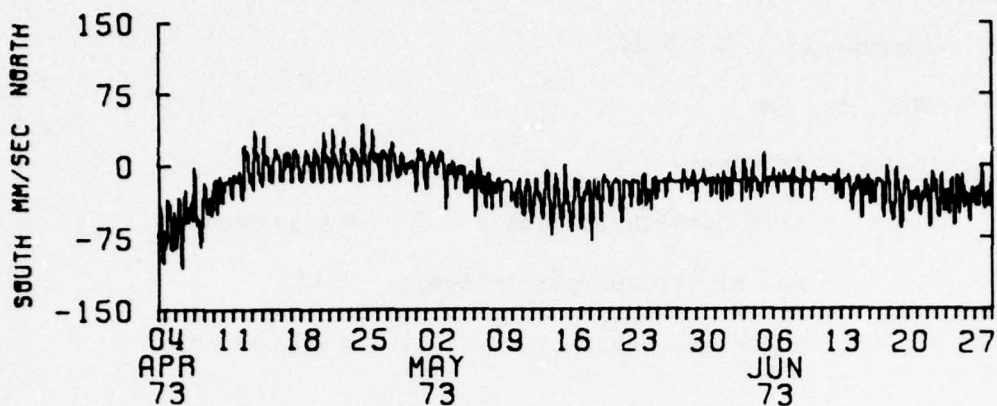
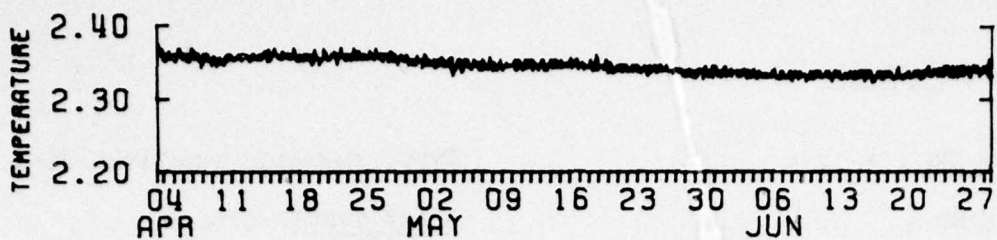
0. 40.
KILOMETERS

497,11K1800

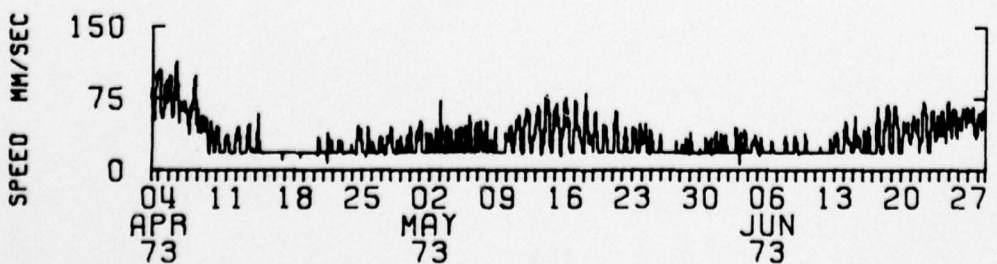
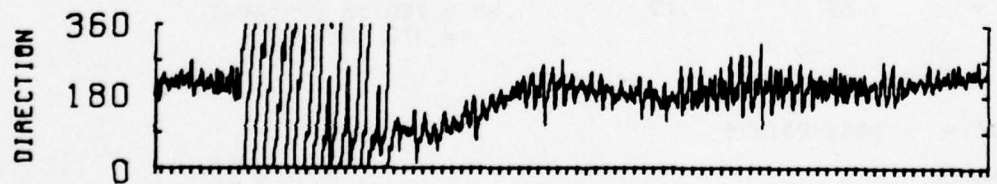
3940 M

73- IV -04 TO 73- VI -28





497.11K1H
3940 M



DATA NUMBER 497,13

Instrument No.: M-129t

Type: Magnetic Tape Recording Current Meter

Depth: 5182 m

Water depth: 5296 m

Start time: 73-April-02 20.00.34.

Stop time: 73-June-21 22.30.34.

Duration: 80d 2h 30m

Sampling scheme: Interval

time between strobos = 5.27 seconds

no. of strobos per interval = 13

recording interval = 1800 seconds

COMMENTS:

Compass - good

Vane - good

Rotor - data edited to correct for an electronic problem - results look good

Temperature - bad

STATS

DATA/ 497.13G1800A

MEAN	=	EAST	NORTH	SPEED	=	*****	EAST & NORTH	*****
STD. ERR.	=	26.16	9.82	41.84	=	COVARIANCE	=	40.11
VARIANCE	=	.56	.28	.35	=	STD. ERR. OF COVARIANCE	=	12.67
STD. DEV.	=	1203.29	307.82	459.40	=	STD. DEV. OF COVARIANCE	=	785.82
KURTOSIS	=	34.89	17.54	21.43	=	CORRELATION COEFFICIENT	=	.088
SKEWNESS	=	3.20	3.44	3.49	=	VECTOR MEAN	=	26.44
	=	-.36	.17	.92	=	VECTOR VARIANCE	=	755.58
					=	STD. DEV.	=	27.49

UNITS OF RAW DATA VARIABLES = MM/SEC

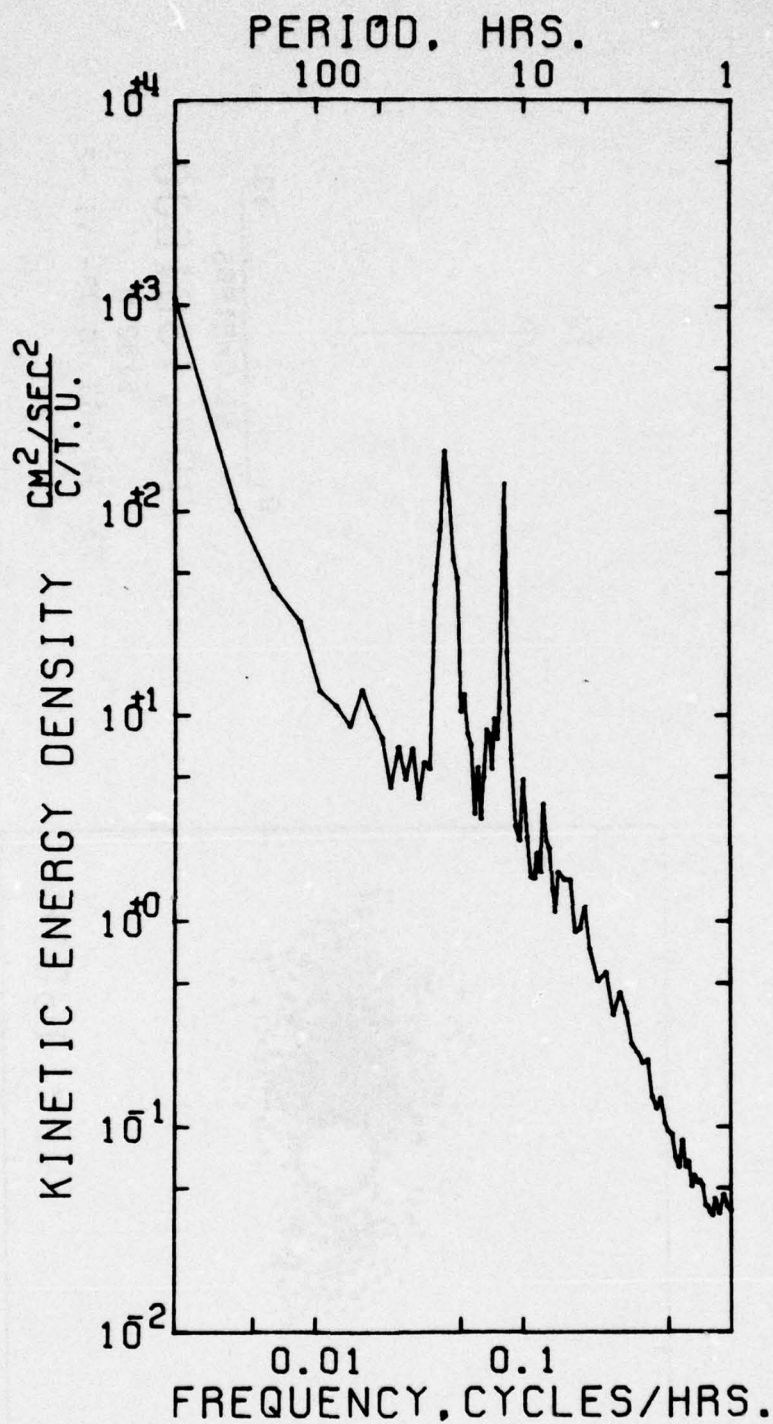
SAMPLE SIZE = 3846 POINTS

SPANNING RANGE

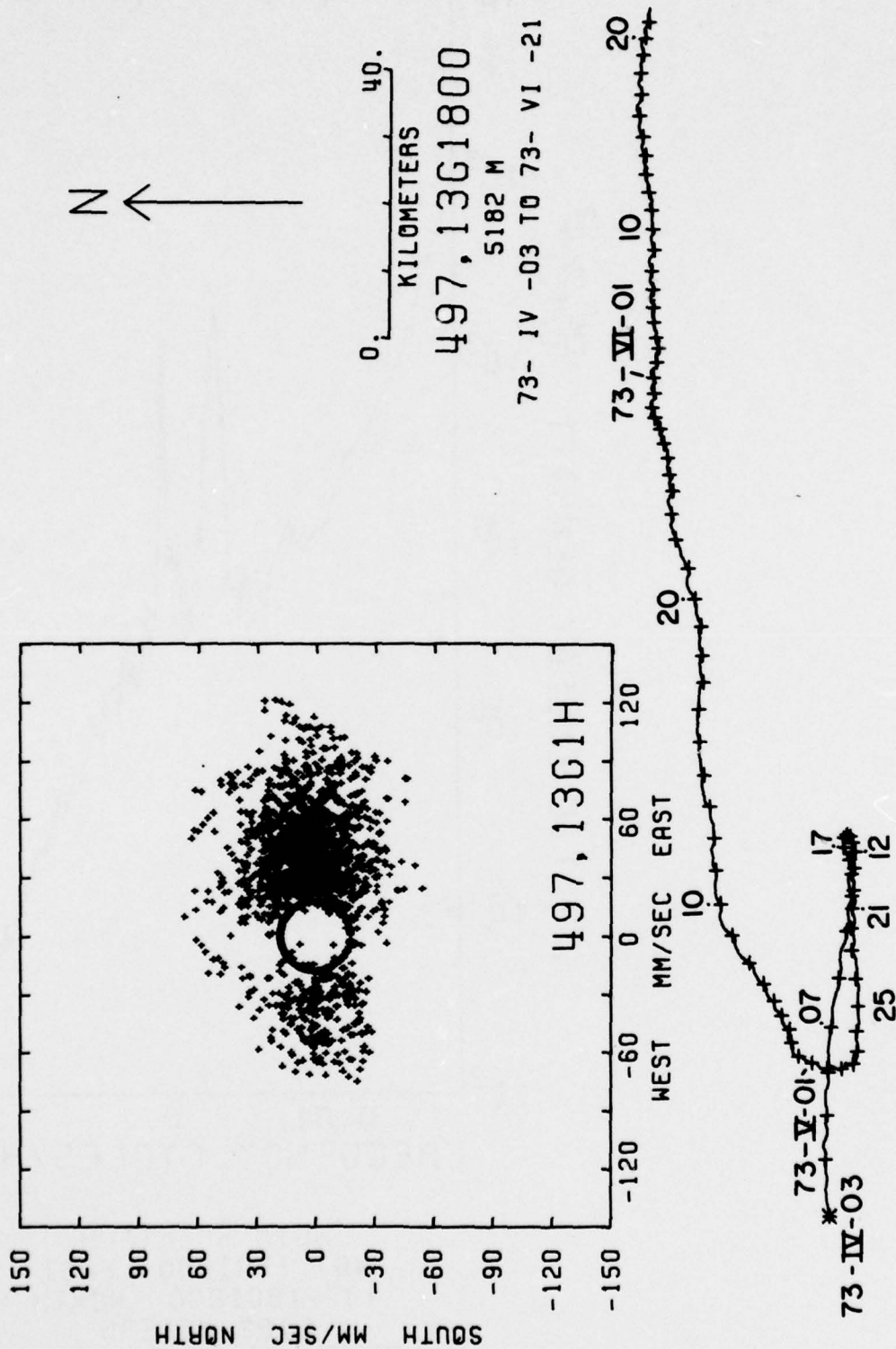
FROM 73- IV -02 20.00.34

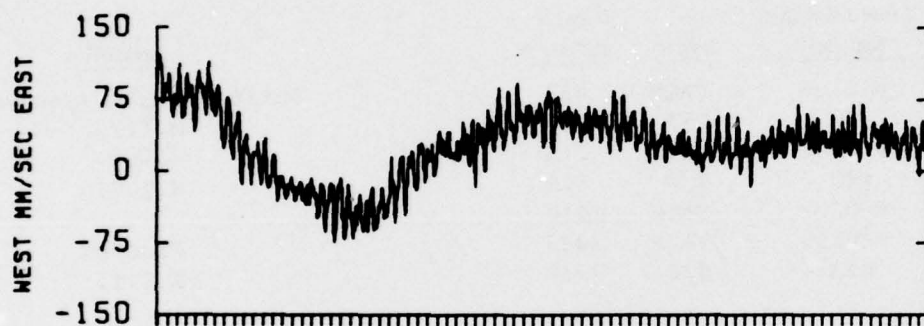
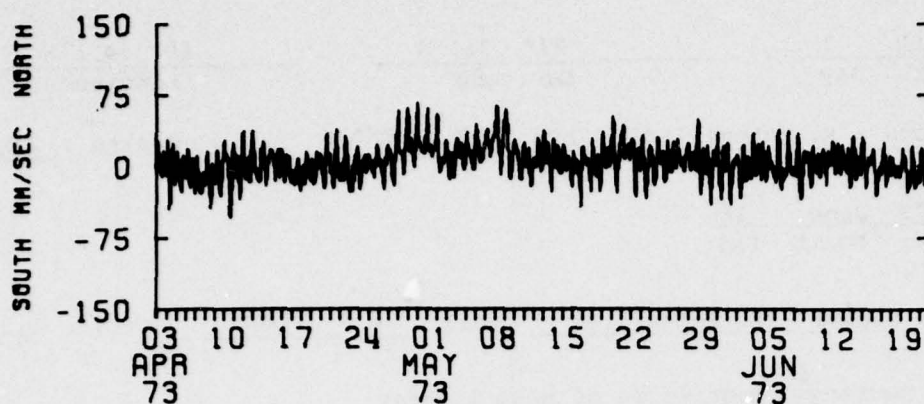
TO 73- VI -21 22.30.34

DURATION 80 DAYS 2 H 30 M 0 S

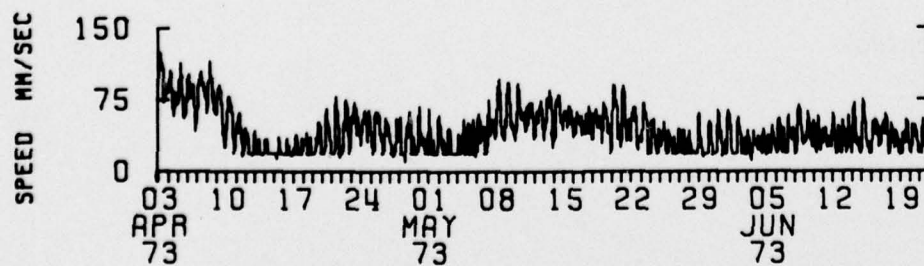
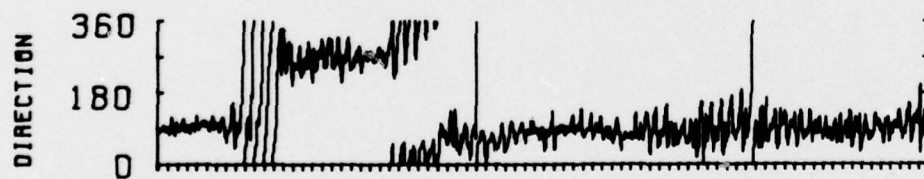


AUTO SPECTRUM
 497.13G1800 EAST
 497.13G1800 NORTH
 5182 METERS
 73-IV-02 TO 73-VI-21
 1 PIECES WITH 1920 ESTIMATES
 PER PIECE. AVERAGED OVER
 4 ADJACENT FREQUENCY BANDS





497.13G1H
5182 M



Mooring No. 498

Set 1973 April 3 27° 33.1'N 69° 34.1'W
Year Month Day Latitude Longitude

Set by J. Gifford - R. Heinmiller Ship R.V. CHAIN Cruise 112 Leg 2

Retrieved 1973 June 28
Year Month Day

Retrieved by G. Tupper - R. Heinmiller Ship R.V. CHAIN Cruise 112 Leg 6

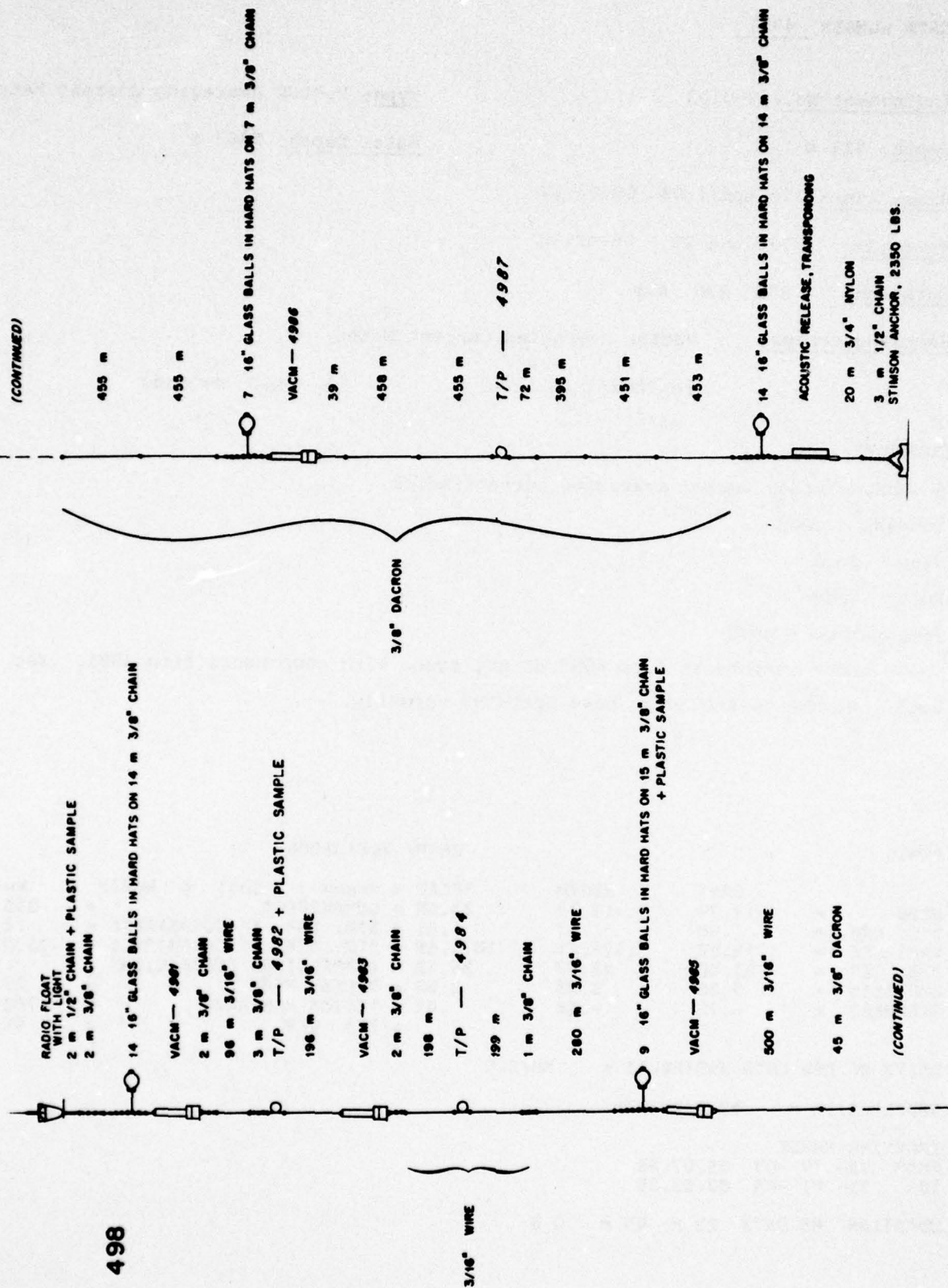
Purpose of Mooring: Mooring #4 of MODE 1 array

Mooring Type: Subsurface

<u>Key</u>	<u>Data Number</u>	<u>Instrument Number</u>	<u>Type</u>	<u>Depth Meters</u>	<u>Comments</u>
*	4981	V-0103	VACM	413	Built by EG&G (Geodyne) M.I.T. I.O.S.
#	4982	#36	T/P	513	
*	4983	V-0158	VACM	713	
#	4984	#49	T/P	914	M.I.T.
+	4985	V-0202	VACM	1414	
	4986	V-0198	VACM	2933	Flooded
#	4987	#23	T/P	3948	M.I.T.
Water depth				5463	

COMMENTS ON MOORING:

STATION 498



DATA NUMBER 4981

Instrument No.: V-0103

Type: Vector Averaging Current Meter

Depth: 413 m

Water Depth: 5463 m

Start time: 73-April-03 09.07.30

Stop time: 73-June-28 08.52.30

Duration: 85d 23h 45m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

A Geodyne model vector averaging current meter

Compass - good

Vane - good

Rotor - good

Temperature - good

The U and V components from 4983 do not agree with components from 4981. Yet both instruments seemed to have operated normally.

STATS

DATA/ 4981J8008

	EAST	NORTH	SPEED	=====	EAST & NORTH	=====
MEAN	-17.74	-17.72	33.06	= COVARIANCE	=	333.71
STD. ERR.	.46	.47	.61	= STD. ERR. OF COVARIANCE	=	28.62
VARIANCE	1714.22	1622.21	3071.88	= STD. DEV. OF COVARIANCE	=	2600.85
STD. DEV.	41.40	42.69	55.42	= CORRELATION COEFFICIENT	=	.189
KURTOSIS	3.83	3.83	2.52	= VECTOR MEAN	=	25.07
SKEWNESS	-.70	-.98	.41	= VECTOR VARIANCE	=	1768.21
				= STD. DEV.	=	42.05

UNITS OF RAW DATA VARIABLES = MM/SEC

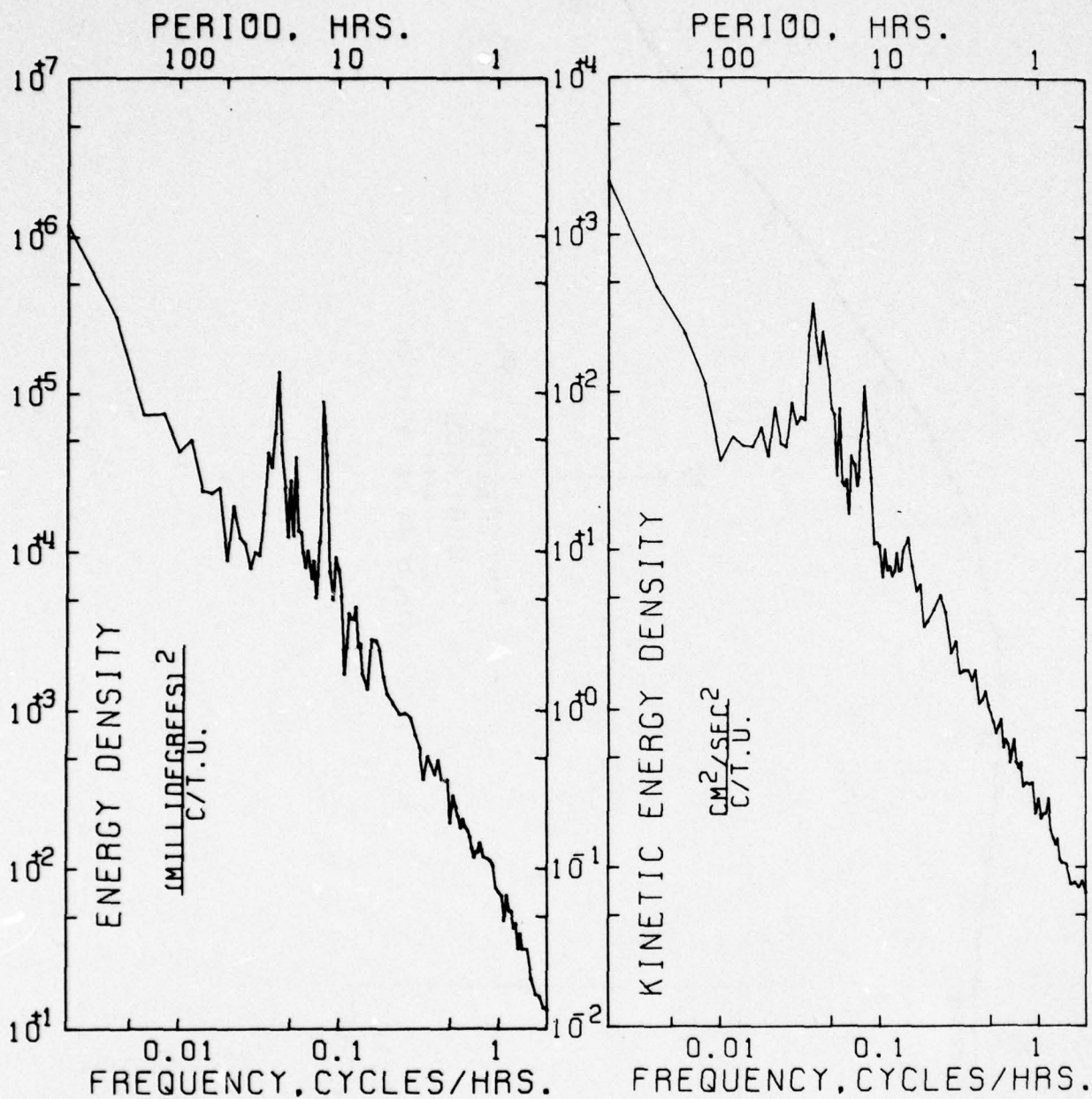
SAMPLE SIZE = 8256 POINTS

SPANNING RANGE

FROM 73- IV -03 09.07.30

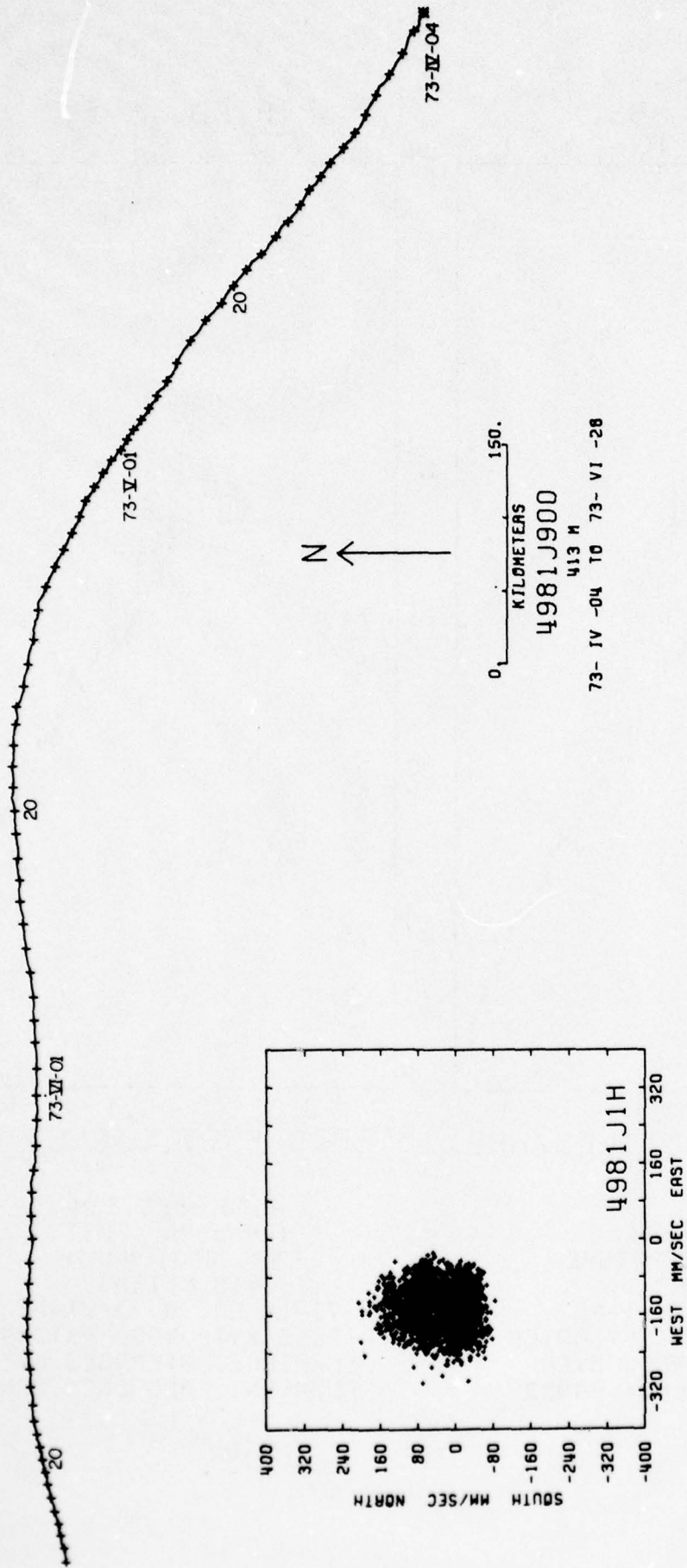
TO 73- VI -28 08.52.30

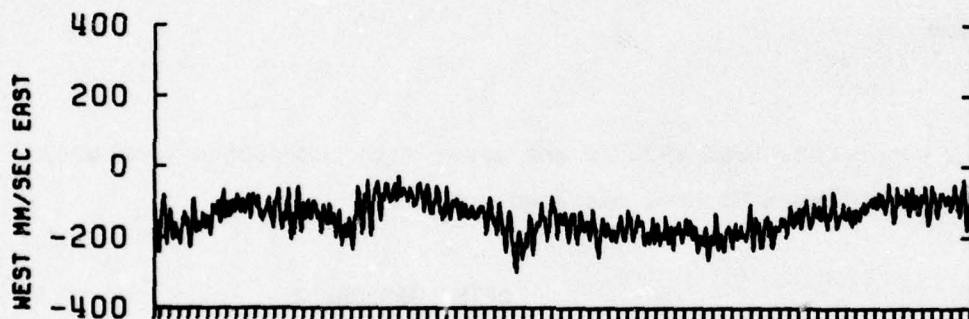
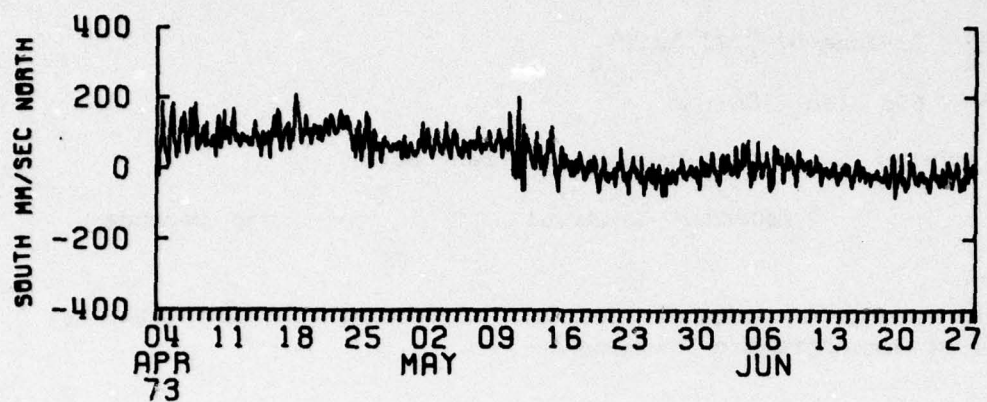
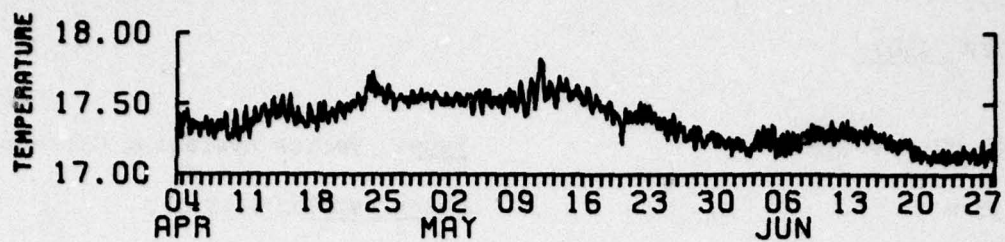
DURATION 85 DAYS 23 H 45 M 0 S



AUTO SPECTRUM
 4981J900 TEMPERATURE
 413 METERS
 73-IV-03 TO 73-VI-25
 1 PIECES WITH 4000 ESTIMATES
 PER PIECE. AVERAGED OVER
 4 ADJACENT FREQUENCY BANDS

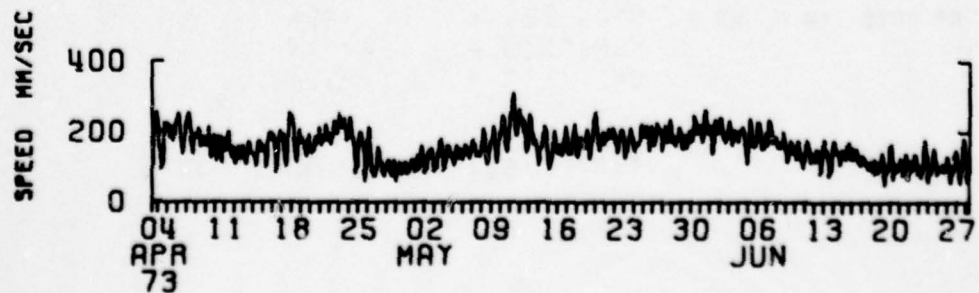
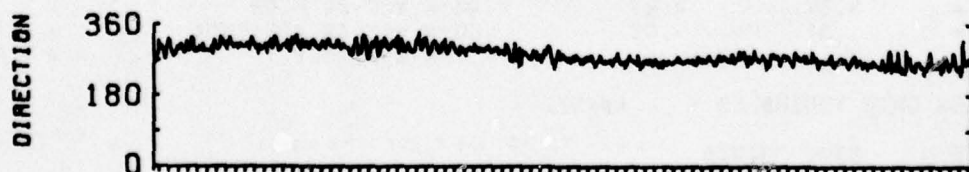
AUTO SPECTRUM
 4981J900 EAST
 4981J900 NORTH
 413 METERS
 73-IV-03 TO 73-VI-25
 1 PIECES WITH 4000 ESTIMATES
 PER PIECE. AVERAGED OVER
 4 ADJACENT FREQUENCY BANDS





4981J1H

413 M



AD-A034 671

WOODS HOLE OCEANOGRAPHIC INSTITUTION MASS

F/G 8/3

A COMPILATION OF MOORED CURRENT DATA AND ASSOCIATED OCEANOGRAPH--ETC(U)

NOV 76 D CHAUSSE, S TARBELL

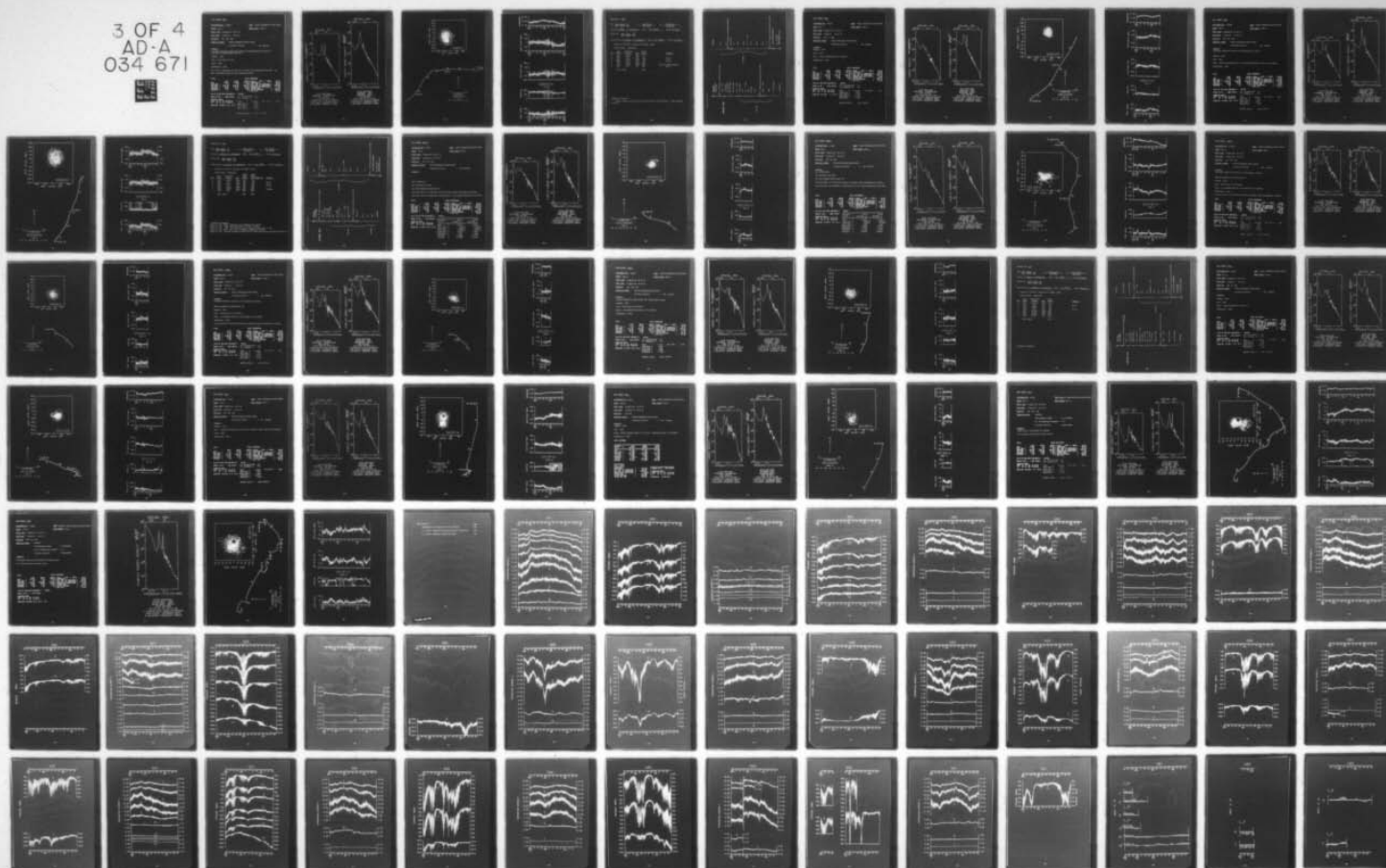
N00014-66-C-0241

UNCLASSIFIED

WHOI-76-101

NL

3 OF 4
AD-A
034 671



DATA NUMBER 4983

Instrument No.: V-0158

Type: Vector Averaging Current Meter

Depth: 713 m

Water Depth: 5463 m

Start time: 73-April-03 09.07.30.

Stop time: 73-June-07 23.52.30.

Duration: 65d 14h 45m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

Instrument belongs to National Institute of Oceanography now known as
Institute of Oceanographic Sciences

Compass - good

Vane - stuck June 8 to end

Rotor - good

Temperature - good

The U and V components from 4981 do not agree with components from 4983. Yet
both instruments seemed to have operated normally.

STATS

DATA/ 498309008

	EAST	NORTH	SPEED	*****	EAST & NORTH	*****
MEAN	-90.73	-36.89	119.75	* COVARIANCE		-429.46
STD. ERR.	.81	.81	.53	* STD. ERR. OF COVARIANCE		79.18
VARIANCE	2970.78	4142.96	1788.74	* STD. DEV. OF COVARIANCE		8284.88
STD. DEV.	48.89	64.37	42.03	* CORRELATION COEFFICIENT		-.137
KURTOSIS	9.84	2.47	2.94	* VECTOR MEAN		87.84
SKEWNESS	.91	-.01	.00	* VECTOR VARIANCE		9258.87
				* STD. DEV.		57.07

UNITS OF RAW DATA VARIABLES = MM/SEC

SAMPLE SIZE = 6300 POINTS

*** TEMPERATURE ***
*** DEGREES C. ***

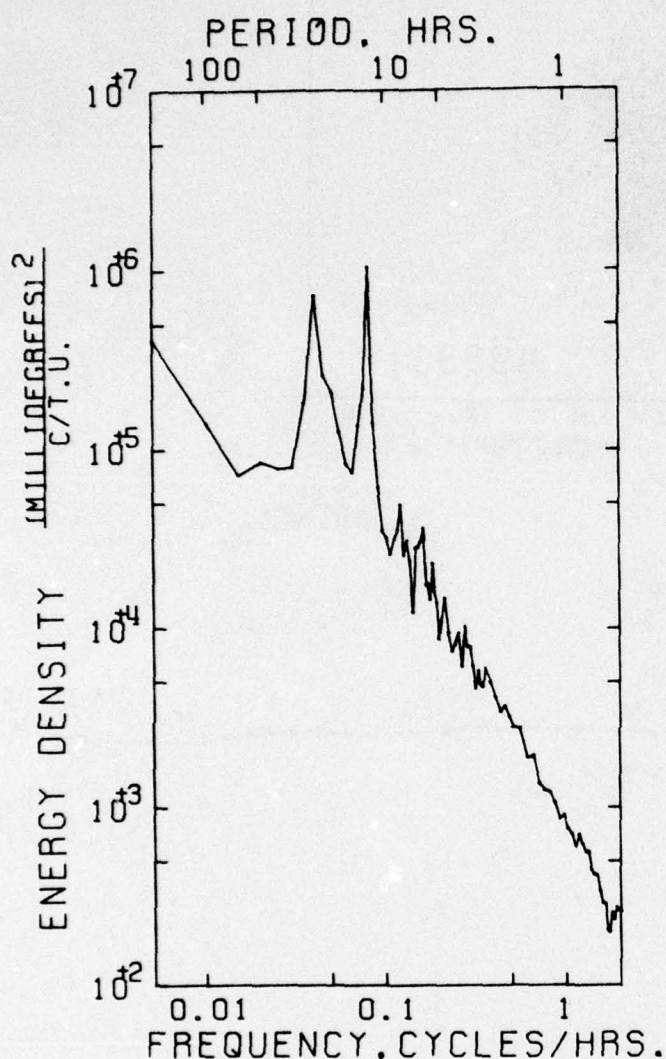
SPANNING RANGE

FROM 73- IV -03 09.07.30
TO 73- VI -07 23.52.30

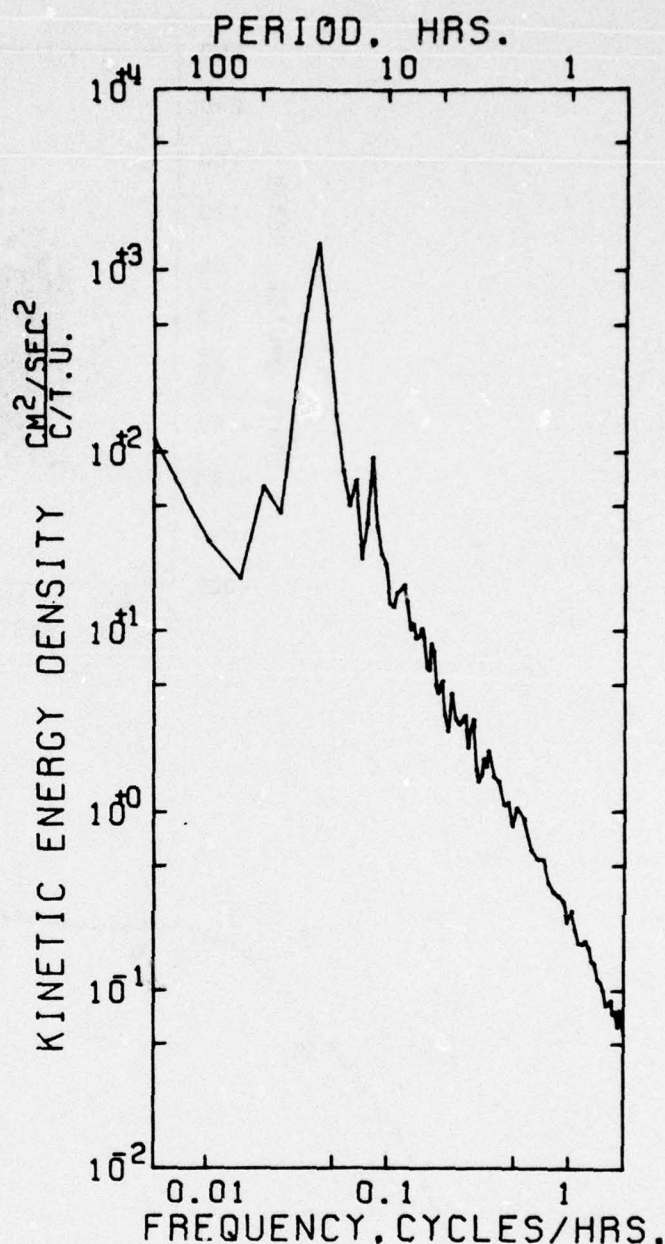
DURATION 65 DAYS 14 H 45 M

MEAN	=	12.761	STD. ERR.	=	.004
VARIANCE	=	.125			
STD. DEV.	=	.354			
KURTOSIS	=	2.229			
SKEWNESS	=	-.313			

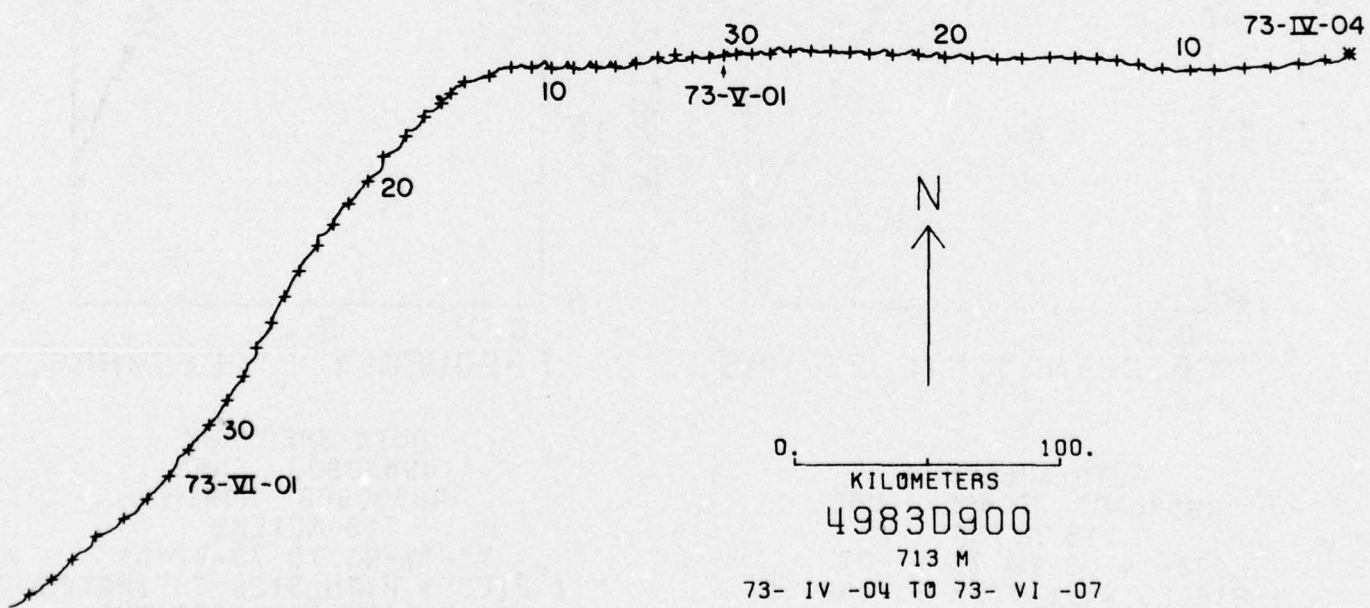
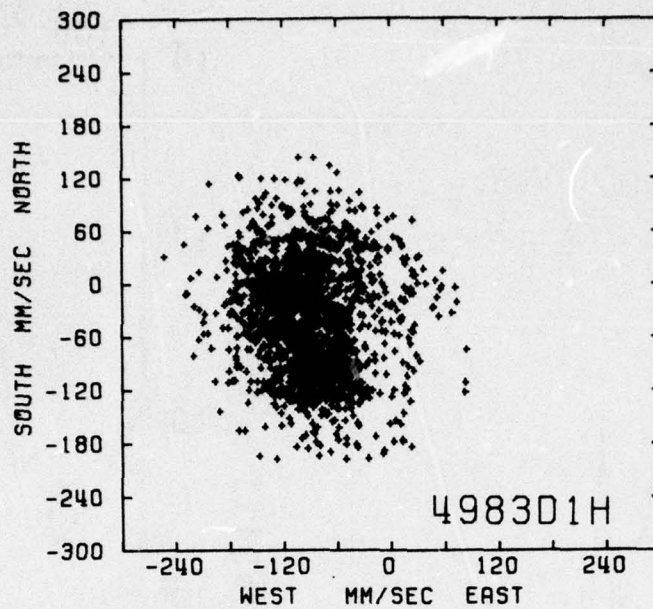
SAMPLE SIZE = 6300 POINTS

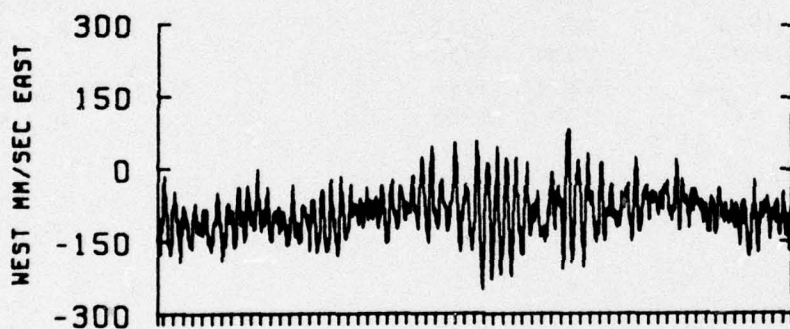
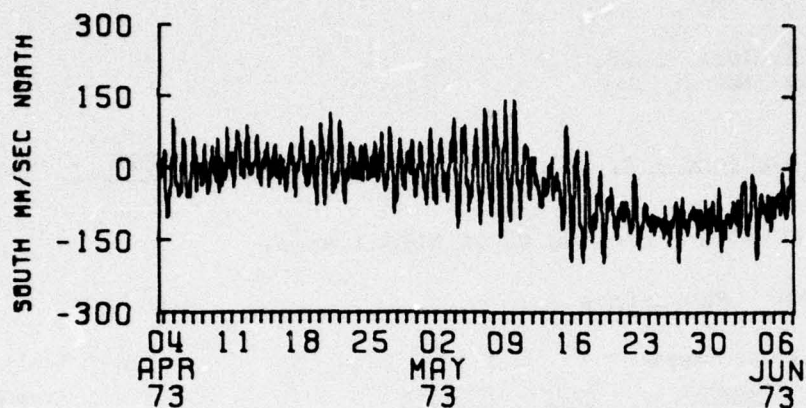
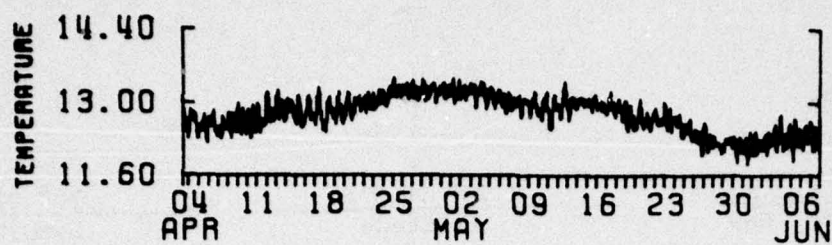


AUTO SPECTRUM
 49830900 TEMPERATURE
 713 METERS
 73-IV-03 TO 73-VI-07
 1 PIECES WITH 3125 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS



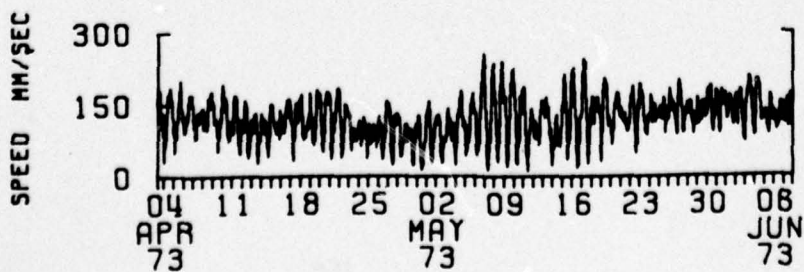
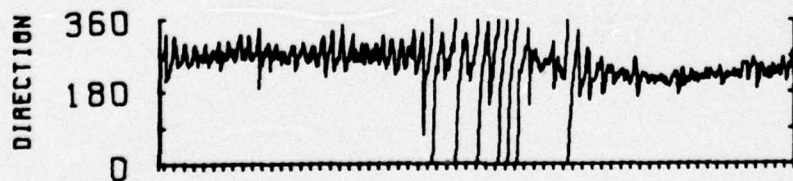
AUTO SPECTRUM
 49830900 EAST
 49830900 NORTH
 713 METERS
 73-IV-03 TO 73-VI-07
 1 PIECES WITH 3125 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS





4983D1H

713 M



Mooring No. 499

Set 1973 April 3 28° 08.9'N 70° 08.1'W
Year Month Day Latitude Longitude

Set by G. Tupper - R. Heinmiller Ship R.V. CHAIN Cruise 112 Leg 2

Retrieved 1973 June 28
Year Month Day

Retrieved by J. Gifford - R. Heinmiller Ship R.V. CHAIN Cruise 112 Leg 6

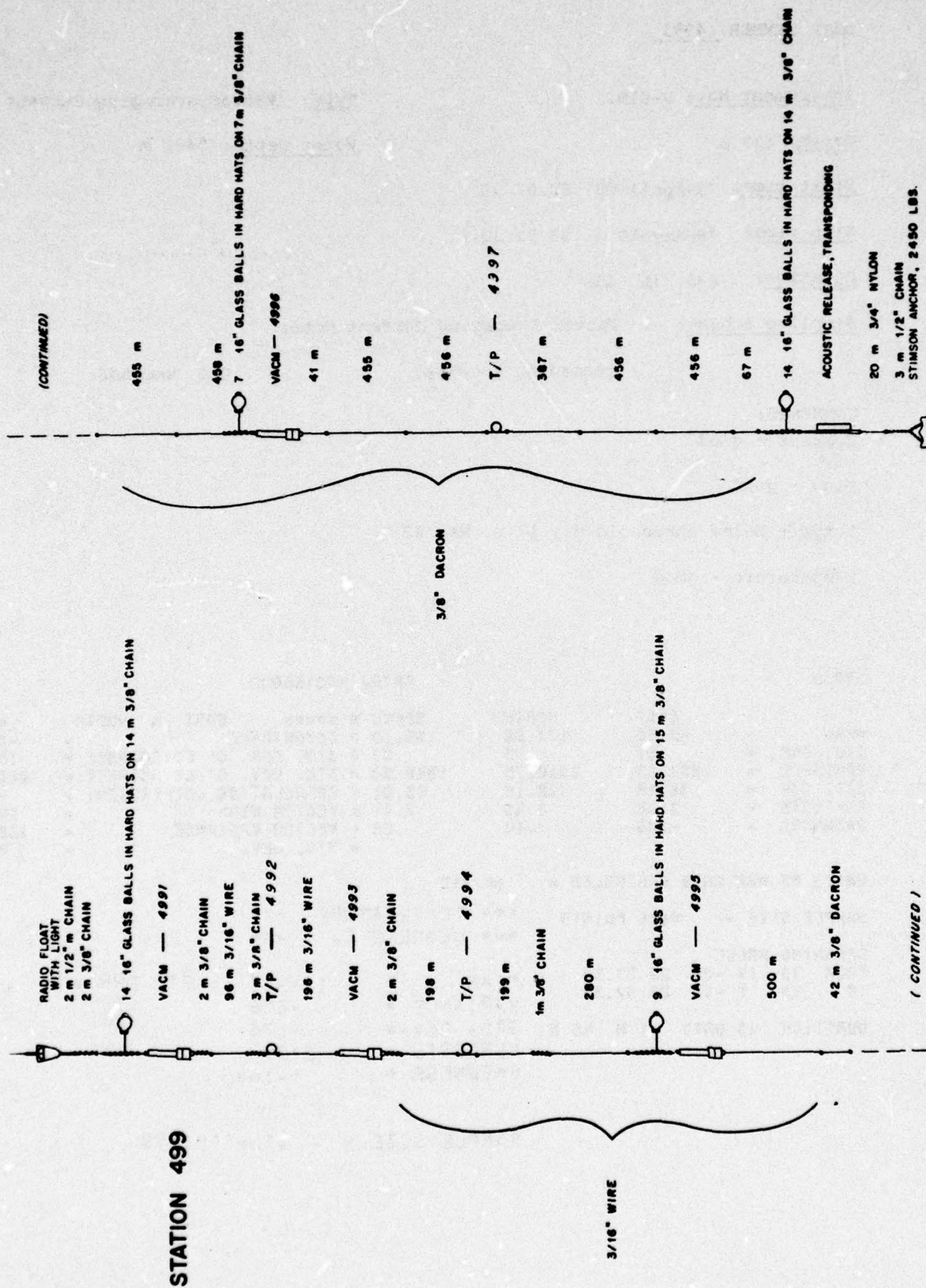
Purpose of Mooring: Mooring #3 of MODE 1 array

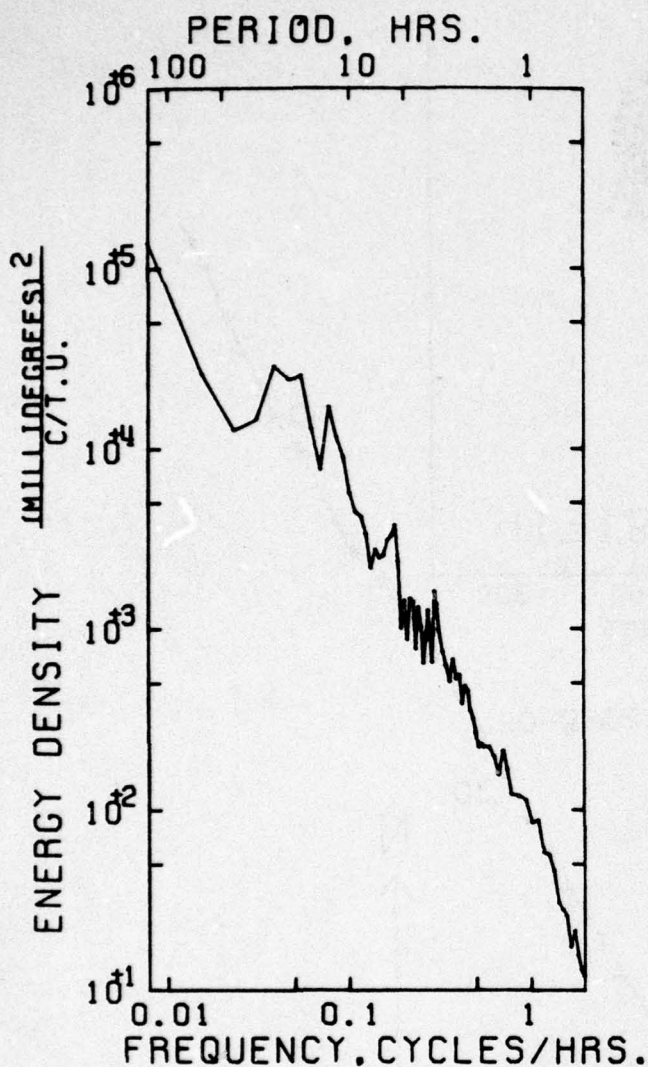
Mooring Type: Subsurface

Key	Data Number	Instrument Number	Type	Depth Meters	Comments
*	4991	V-0193	VACM	427	
#	4992	#14	T/P	531	M.I.T.
*	4993	V-0159	VACM	728	I.O.S.
#	4994	#48	T/P	933	M.I.T.
+	4995	V-0205	VACM	1428	
	4996	V-0102	VACM	2945	Built by EG&G (Geodyne)
#	4997	#22	T/P	3956	M.I.T.
	Water depth			5461	

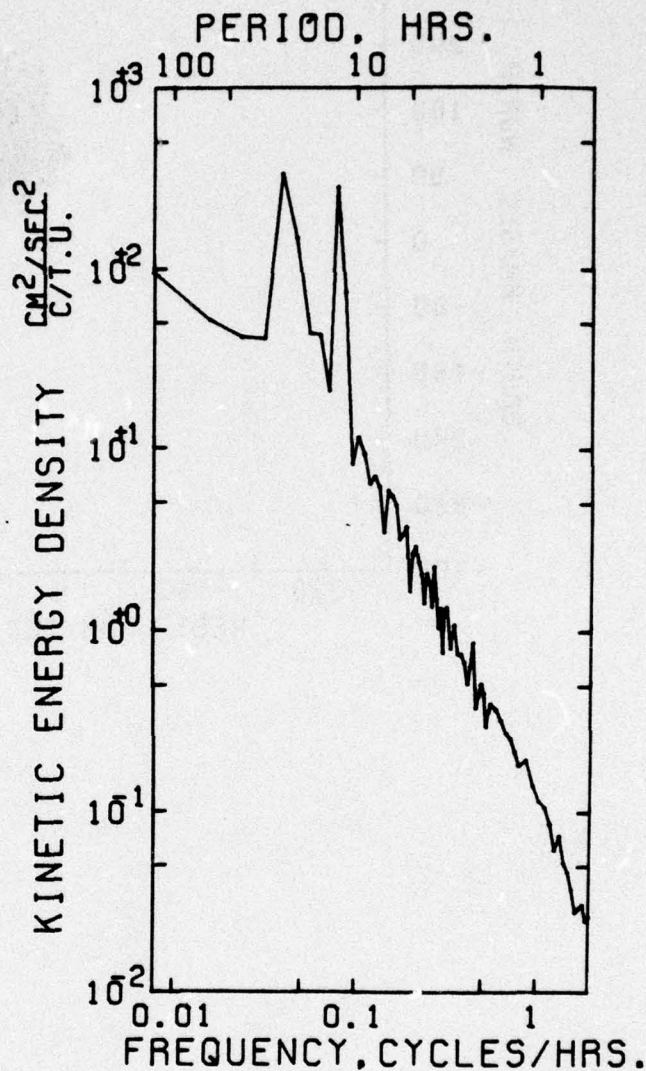
COMMENTS ON MOORING:

Water soluble tape used on rotor and vanes of current meters. Shark watched recovery.

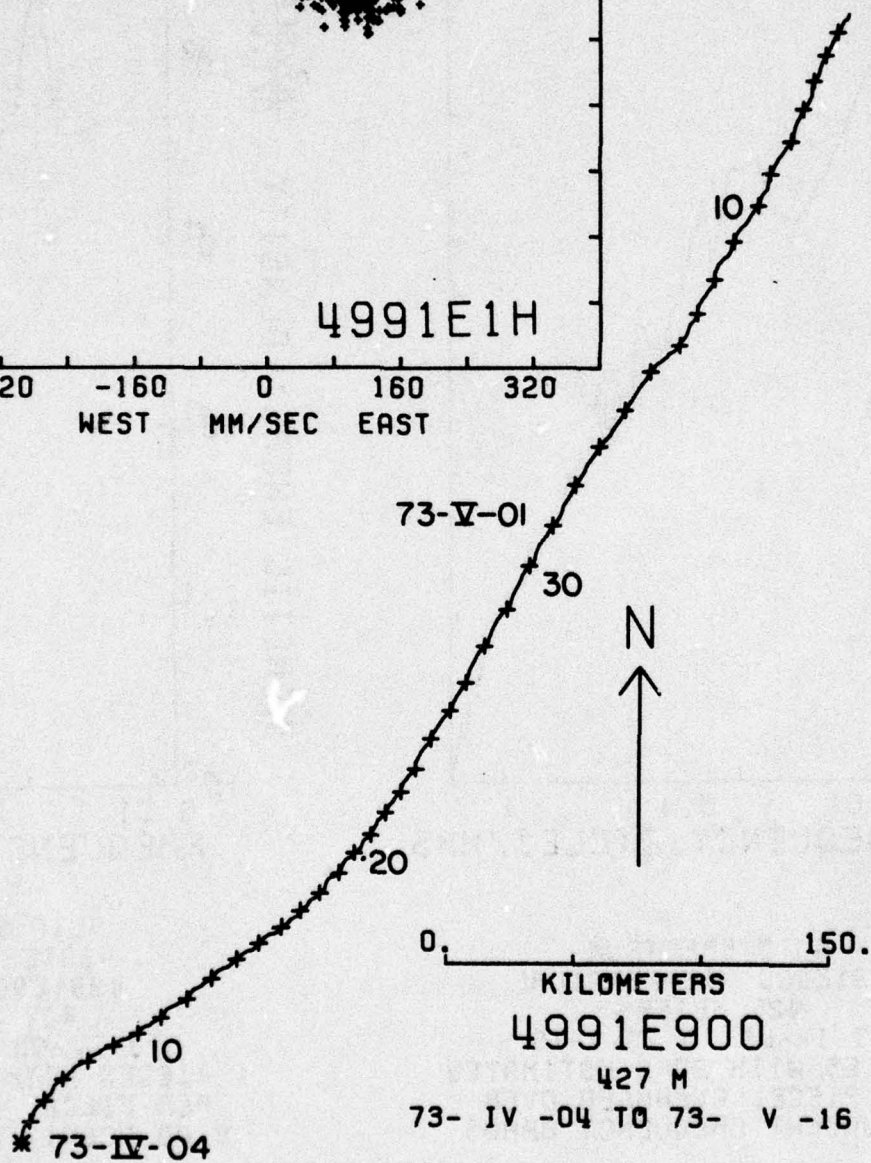
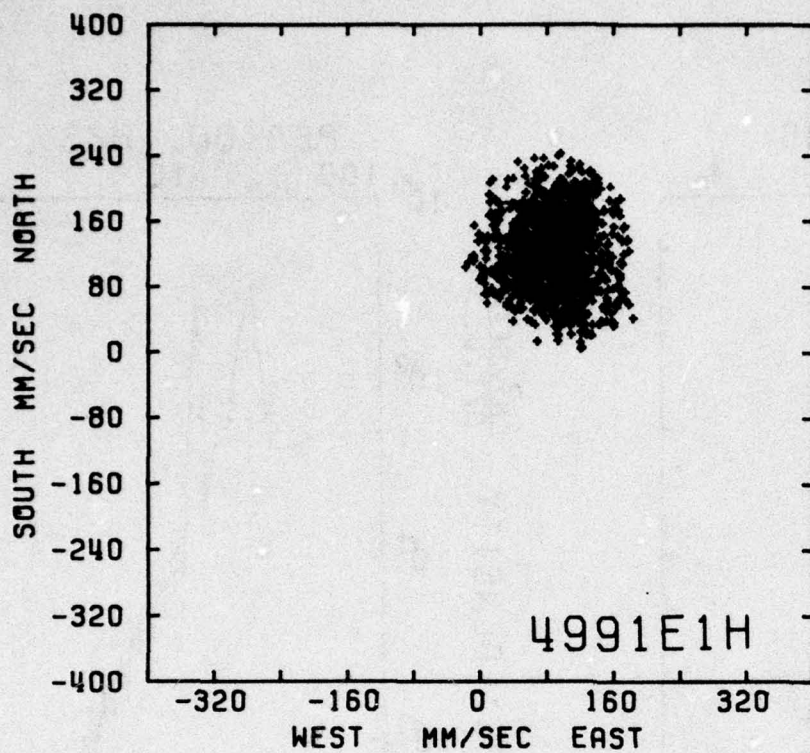


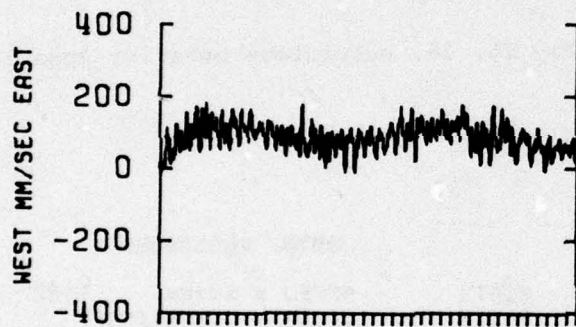
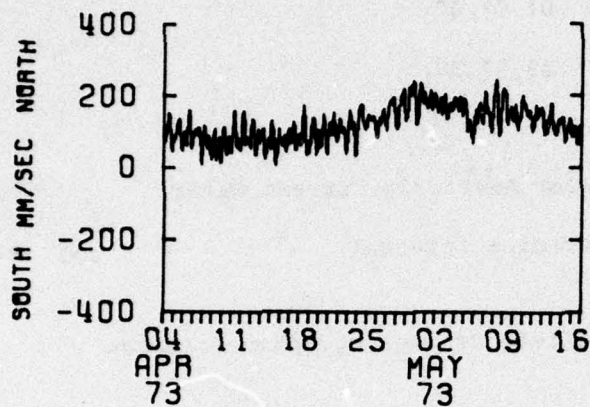
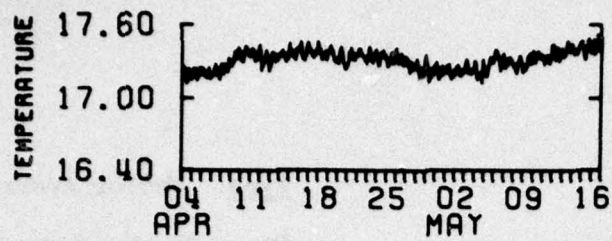


AUTO SPECTRUM
 4991E900 TEMPERATURE
 427 METERS
 73-IV-03 TO 73-V-15
 1 PIECES WITH 2048 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS

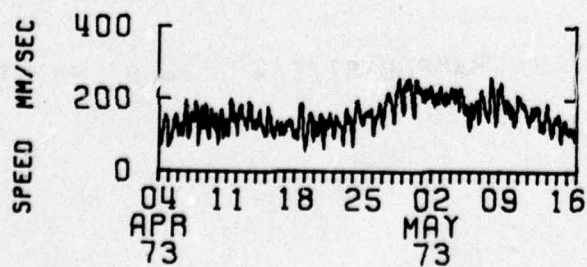
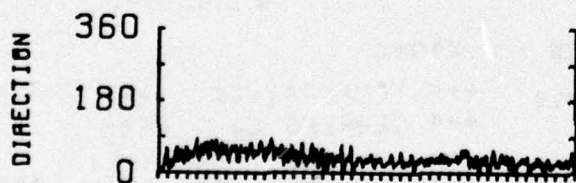


AUTO SPECTRUM
 4991E900 EAST
 4991E900 NORTH
 427 METERS
 73-IV-03 TO 73-V-16
 1 PIECES WITH 2048 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS





4991E1H
427 M



DATA NUMBER 4993

Instrument No.: V-0159

Type: Vector Averaging Current Meter

Depth: 728 m

Water Depth: 5461 m

Start time: 73-April-04 01.07.30.

Stop time: 73-May-24 23.52.30.

Duration: 50d 22h 45m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

Instrument owned by Institute of Oceanographic Sciences

Compass - good

Vane - good

Rotor - below threshold May 25, 26, suspicious behavior June 18 to recovery

Temperature - good

STATS

DATA/ 49938900A

	EAST	NORTH	SPEED	*****	EAST & NORTH	*****
MEAN	39.00	75.16	102.54	COVARIANCE		-174.62
STD. ERR.	.74	.88	.71	STD. ERR. OF COVARIANCE		75.46
VARIANCE	2844.78	3578.92	2447.89	STD. DEV. OF COVARIANCE		5278.21
STD. DEV.	51.43	59.83	49.47	CORRELATION COEFFICIENT		-.057
KURTOSIS	2.44	2.49	2.42	VECTOR MEAN		82.08
SKEWNESS	.04	.15	.97	VECTOR VARIANCE		3112.95
				STD. DEV.		55.79

UNITS OF RAW DATA VARIABLES *

MM/SEC

SAMPLE SIZE = 4892 POINTS

*** TEMPERATURE ***
*** DEGREES C. ***

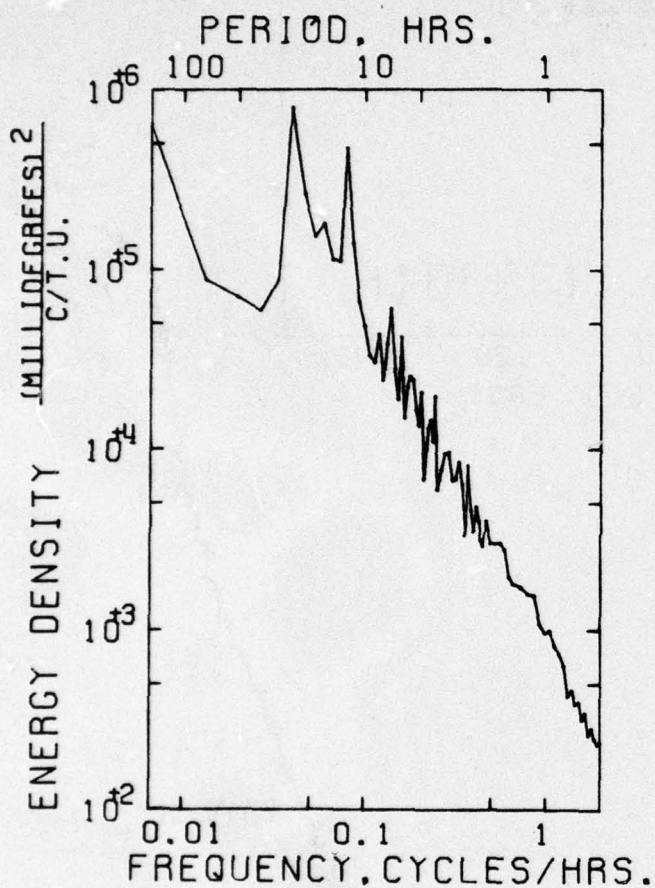
SPANNING RANGE

FROM 73- IV -04 01.07.30
TO 73- V -24 23.52.30

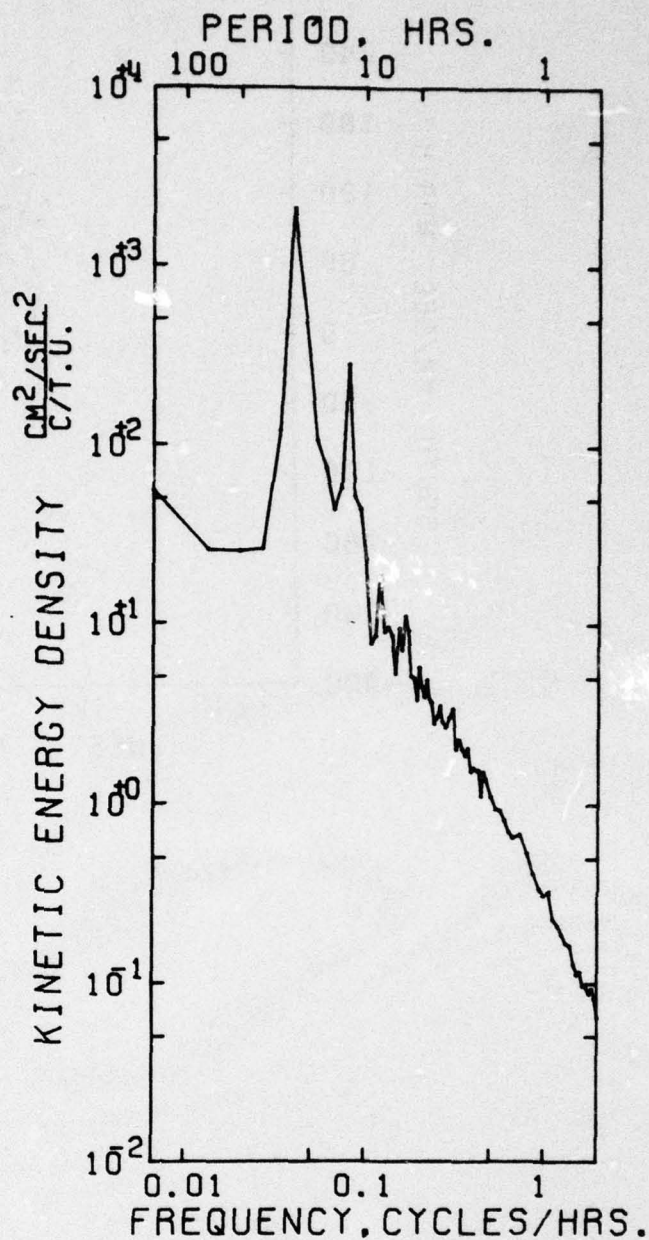
MEAN	12.407	STD ERR	.004
VARIANCE	.071		
STD. DEV.	.267		
KURTOSIS	3.076		
SKEWNESS	.272		

DURATION 50 DAYS 22 H 45 M

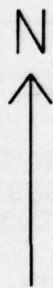
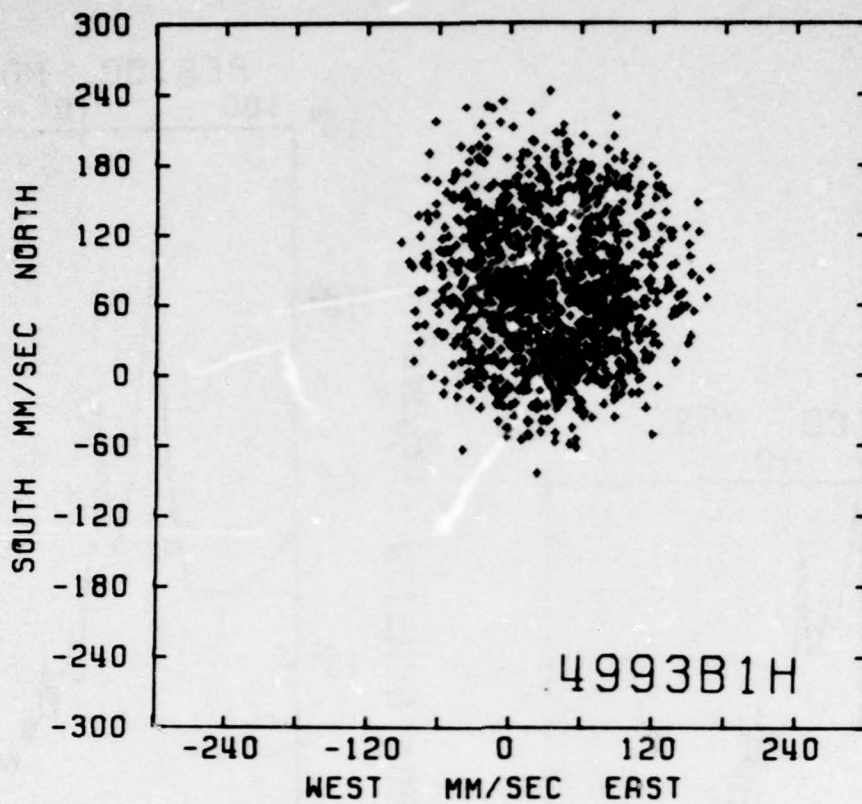
SAMPLE SIZE = 4892 POINTS



AUTO SPECTRUM
4993B900 TEMPERATURE
728 METERS
73-IV-04 TO 73-V-24
1 PIECES WITH 2430 ESTIMATES
PER PIECE. AVERAGED OVER
8 ADJACENT FREQUENCY BANDS



AUTO SPECTRUM
4993B900 EAST
4993B900 NORTH
728 METERS
73-IV-04 TO 73-V-24
1 PIECES WITH 2430 ESTIMATES
PER PIECE. AVERAGED OVER
8 ADJACENT FREQUENCY BANDS

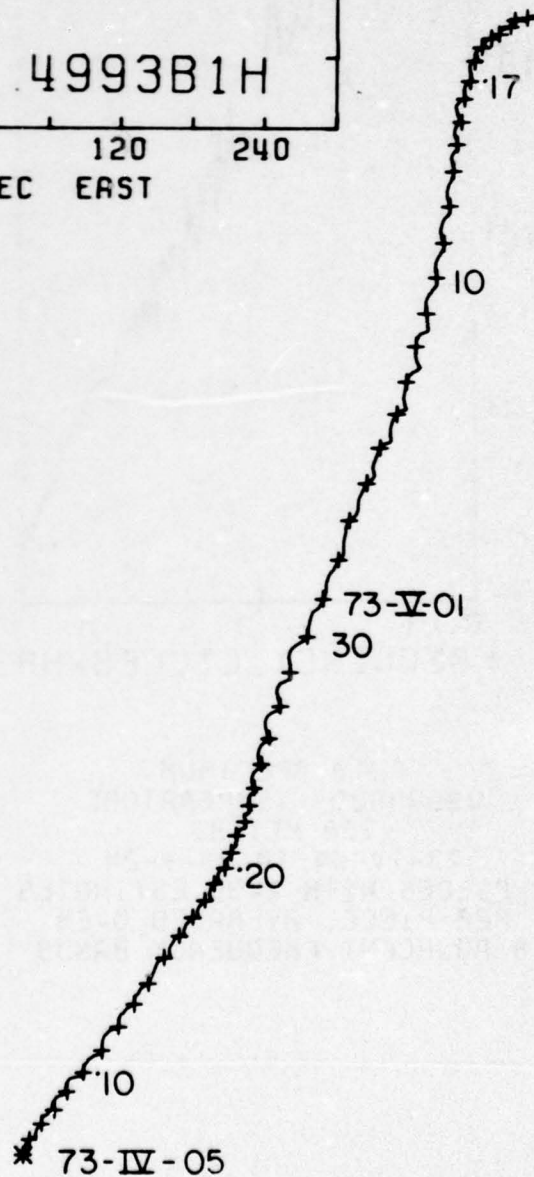


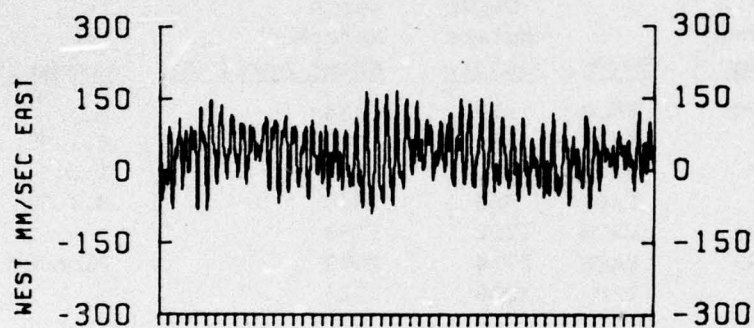
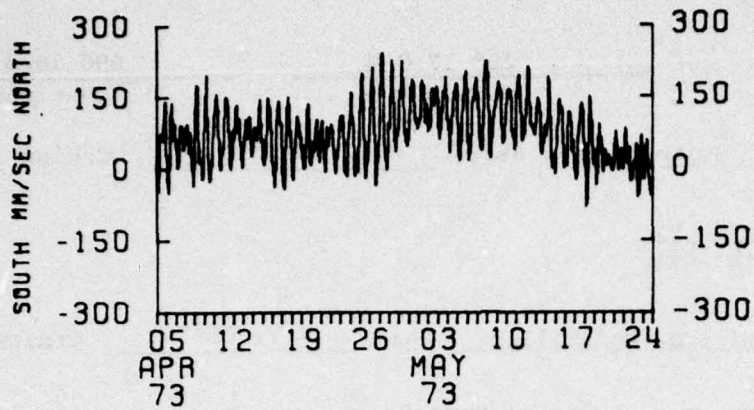
0. 100.
KILOMETERS

4993B900

728 M

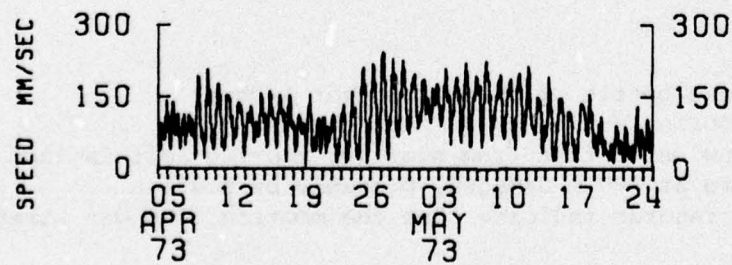
73- IV -05 TO 73- V -24





4993B1H

728 M



Mooring No. 500

Set 1973 April 4 28° 17.0'N 69° 16.3'W
Year Month Day Latitude Longitude

Set by J. Gifford - R. Heinmiller Ship R.V. CHAIN Cruise 112 Leg 2

Retrieved 1973 June 27
Year Month Day

Retrieved by J. Gifford - R. Heinmiller Ship R.V. CHAIN Cruise 112 Leg 6

Purpose of Mooring: Mooring #2 of MODE 1 array

Mooring Type: Subsurface

Key	Data Number	Instrument Number	Type	Depth Meters Before	Depth Meters After April 26	Comments
*	5001	V-0129	VACM	379	334	
#	5002	#13	T/P	485	443	M.I.T.
*	5003	V-156	VACM	681	639	I.O.S.
#	5004	#47	T/P	882	840	M.I.T.
*	5005	V-0201	VACM	1382	1349	
	5006	V-0197	VACM	2914	2890	Flooded
+	5007	#30	T/P	3936	3923	
	Water depth			5456	5456	

COMMENTS ON MOORING:

April 4, 1973 0434Z Broke bottle of champagne over anchor
April 26, 1973 0900Z Mooring fouled by E. Katz' towfish
April 26, 1973 1700Z Tow cable free from mooring, mooring left in tact
June 27, 1973 0608Z Wire at 790 m damaged, probably by towfish
August 8, 1973 Pressure records indicate that the mooring line was stretched on April 26

STATION 500

RADIO FLOAT
WITH LIGHT
2 m 1/2" CHAIN
2 m 3/8" CHAIN

14 16" GLASS BALLS IN HARD HATS ON 14 m 3/8" CHAIN

VACM — 5001

2 m 3/8" CHAIN

96 m 3/16" WIRE

3 m 3/8" CHAIN

T/P — 5002

196 m

VACM — 5005

2 m 3/8" CHAIN

198 m

T/P — 5004

199 m 1 m 3/4" CHAIN

280 m

9 16" GLASS BALLS IN HARD HATS ON 15 m 3/8" CHAIN

VACM — 5005

500 m

43 m

456 m

(CONTINUED)

3/16" WIRE

3/8" DACRON

3/8" DACRON

(CONTINUED)

456 m

7 16" GLASS BALLS IN HARD HATS ON 7 m 3/8" CHAIN

VACM — 5006

9 m

32 m

455 m

456 m

T/P — 5007

85 m

400 m

455 m

450 m

14 16" GLASS BALLS IN HARD HATS ON 14 m 3/8" CHAIN

ACOUSTIC RELEASE, TRANSPONDING

20 m 3/4" NYLON

3 m 1/2" CHAIN

STINSON ANCHOR, 2300 LBS.

DATA NUMBER 5001A

Instrument No.: V-0129

Type: Vector Averaging Current Meter

Depth: 379 m

Water Depth: 5456 m

Start time: 73-April-04 08.07.30.

Stop time: 73-April-26 04.52.30.

Duration: 21d 20h 45m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

Dual thermistors

All variables look good

Tow fish snagged mooring April 26

Data processed in two sections since instrument depth decreased by 45 meters

Data from only one thermistor is plotted due to the strong similarity of the data

STATS

DATA/ 5001A0900A

MEAN	=	EAST	NORTH	SPEED	=	*****	EAST & NORTH	*****
STD. ERR.	=	125.04	-88.33	148.43	=	COVARIANCE	=	499.45
VARIANCE	=	.96	.82	.80	=	STD. ERR. OF COVARIANCE	=	114.35
STD. DEV.	=	1932.41	1408.95	1348.22	=	STD. DEV. OF COVARIANCE	=	5240.13
KURTOSIS	=	43.96	37.54	36.89	=	CORRELATION COEFFICIENT	=	.303
SKEWNESS	=	3.68	3.04	3.42	=	VECTOR MEAN	=	141.55
	=	.05	.47	.18	=	VECTOR VARIANCE	=	1870.88
					=	STD. DEV.	=	40.87

UNITS OF RAW DATA VARIABLES = MM/SEC

SAMPLE SIZE = 2100 POINTS

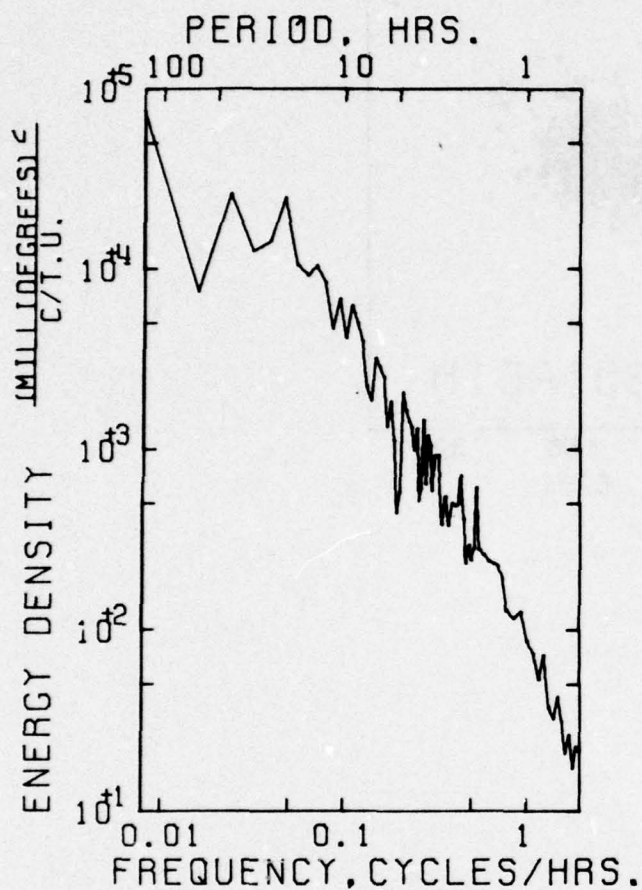
SPANNING RANGE

FROM 73- IV -04 08.07.30

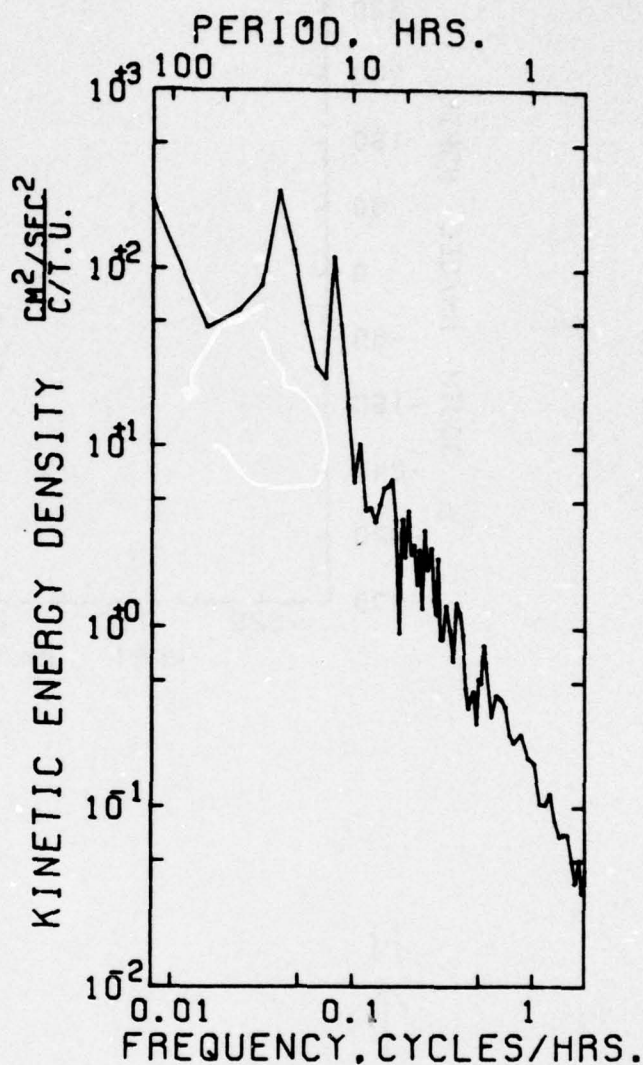
TO 73- IV -26 04.52.30

DURATION 21 DAYS 20 H 45 M

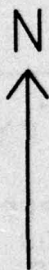
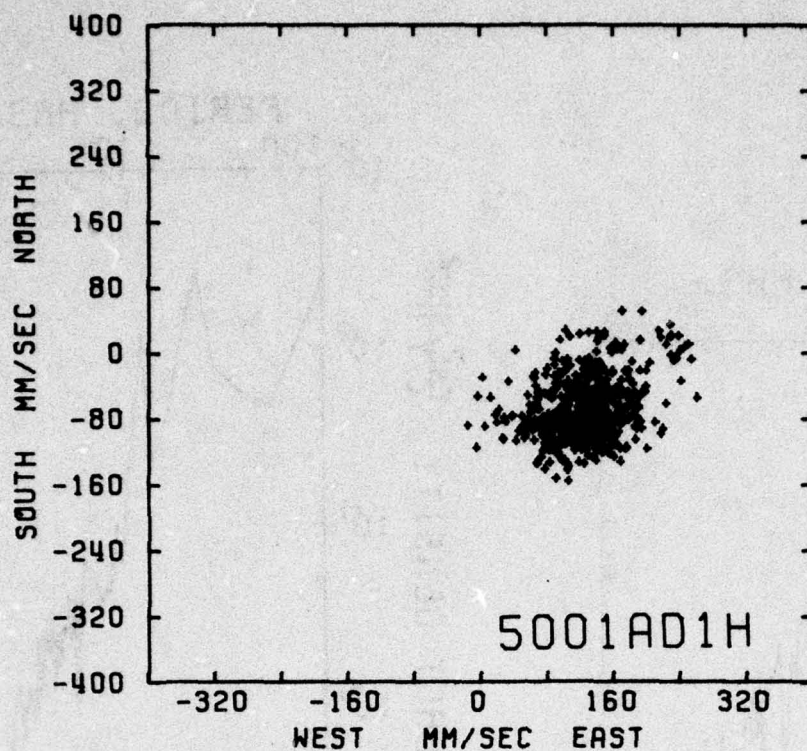
VARIABLE	*	TEMP1	TEMP2
UNITS	*	DEGREES C.	DEGREES C.
MEAN	=	17.739	17.729
STD. ERR.	=	.118E-2	.118E-2
VARIANCE	=	.293E-2	.293E-2
STD. DEV.	=	.541E-1	.542E-1
KURTOSIS	=	2.945	2.951
SKEWNESS	=	.392	.392
MINIMUM	=	17.620	17.610
MAXIMUM	=	17.918	17.909



AUTO SPECTRUM
 5001AD900 TEMPERATURE
 379 METERS
 73-IV-04 TO 73-IV-25
 1 PIECES WITH 1024 ESTIMATES
 PER PIECE. AVERAGED OVER
 4 ADJACENT FREQUENCY BANDS



AUTO SPECTRUM
 5001AD900 EAST
 5001AD900 NORTH
 379 METERS
 73-IV-04 TO 73-IV-25
 1 PIECES WITH 1024 ESTIMATES
 PER PIECE. AVERAGED OVER
 4 ADJACENT FREQUENCY BANDS

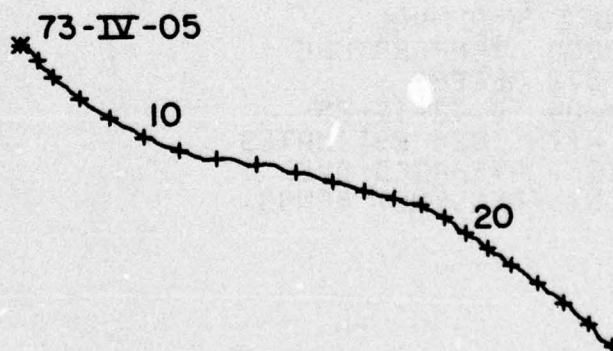


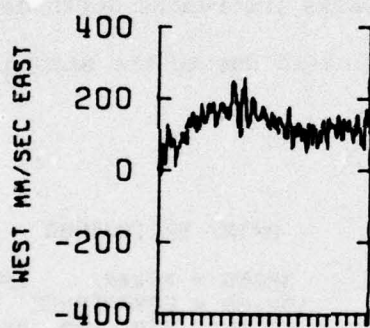
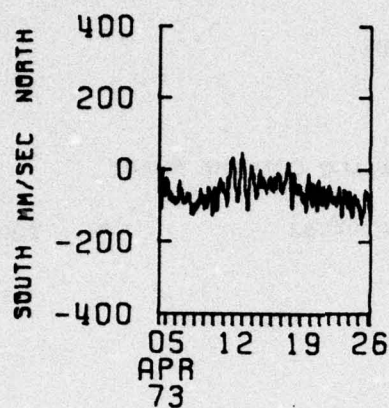
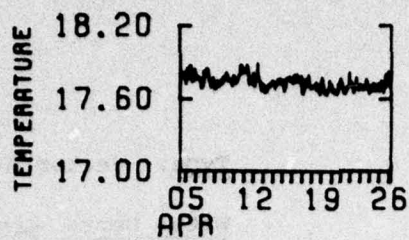
0. 150.
KILOMETERS

5001AD900

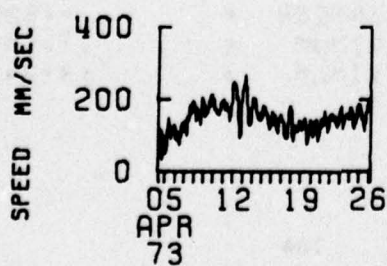
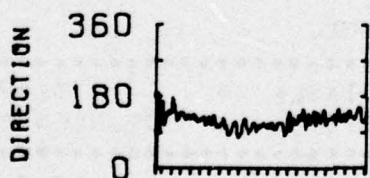
379 M

73- IV -05 TO 73- IV 26





5001AD1H
379 M



DATA NUMBER 5001B

Instrument No.: V-0129

Type: Vector Averaging Current Meter

Depth: 334 m

Water Depth: 5456 m

Start time: 73-April-26 18.07.30.

Stop time: 73-June-27 02.52.30.

Duration: 61d 8h 45m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

Dual thermistors

All variables look good

Tow fish snagged mooring April 26

Data processed in two sections because instrument depth decreased by 45 meters

Data from only one thermistor is plotted due to the strong similarity of the data

STATS

DATA/ 5001B09008

	EAST	NORTH	SPEED	EAST & NORTH	
MEAN	16.61	-123.05	144.49		72.20
STD. ERR.	.97	.63	.64		131.86
VARIANCE	5565.04	2335.45	2440.13		10121.11
STD. DEV.	74.60	48.33	49.40		.020
KURTOSIS	3.84	4.19	5.07		124.17
SKEWNESS	.51	-.53	1.10		3950.24
					62.85

UNITS OF RAW DATA VARIABLES = MM/SEC

SAMPLE SIZE = 5892 POINTS

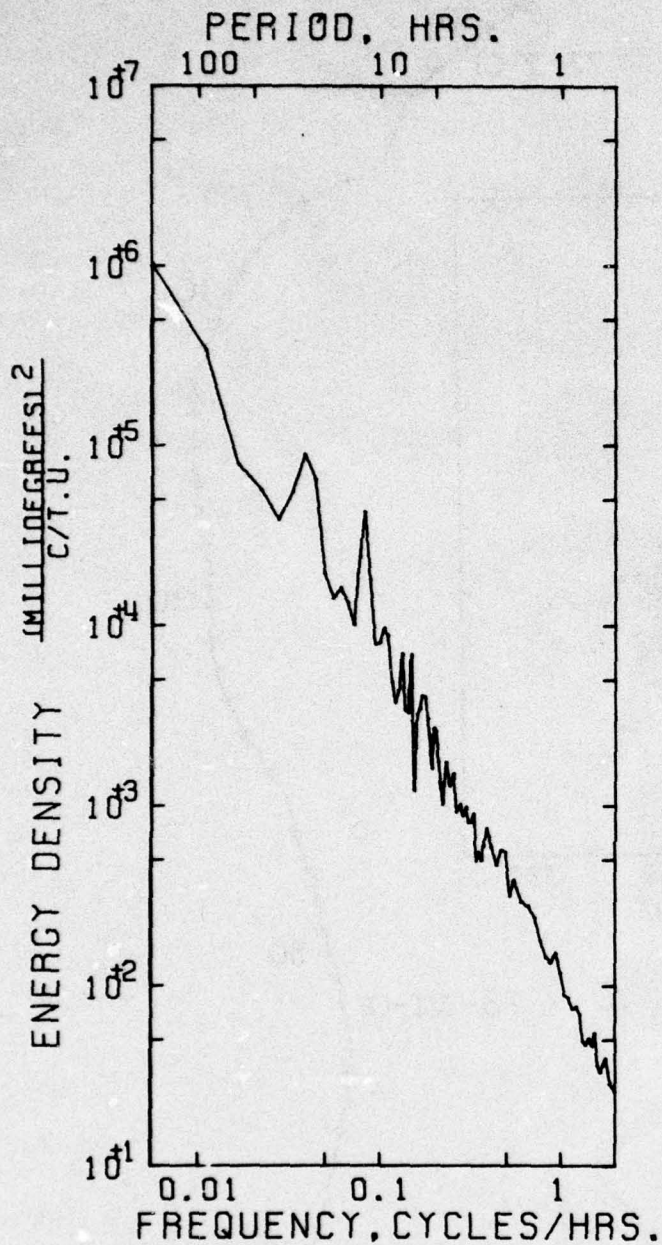
SPANNING RANGE

FROM 73- IV -26 18.07.30

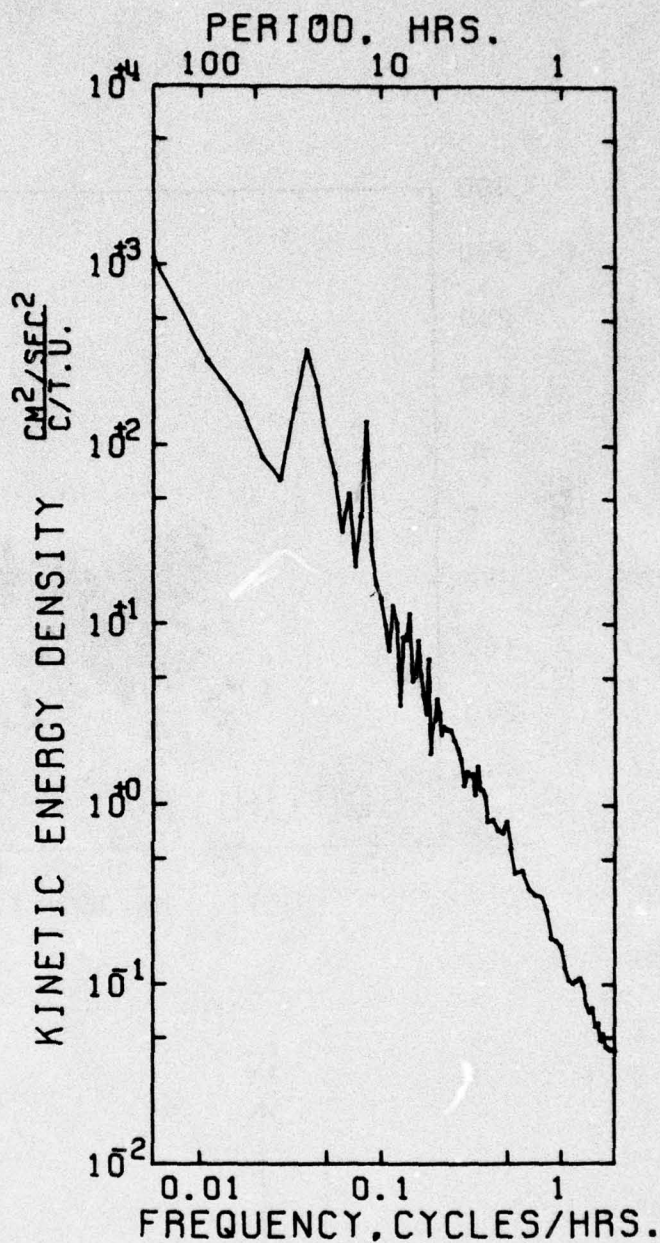
TO 73- VI -27 02.52.30

DURATION 61 DAYS 8 H 45 M

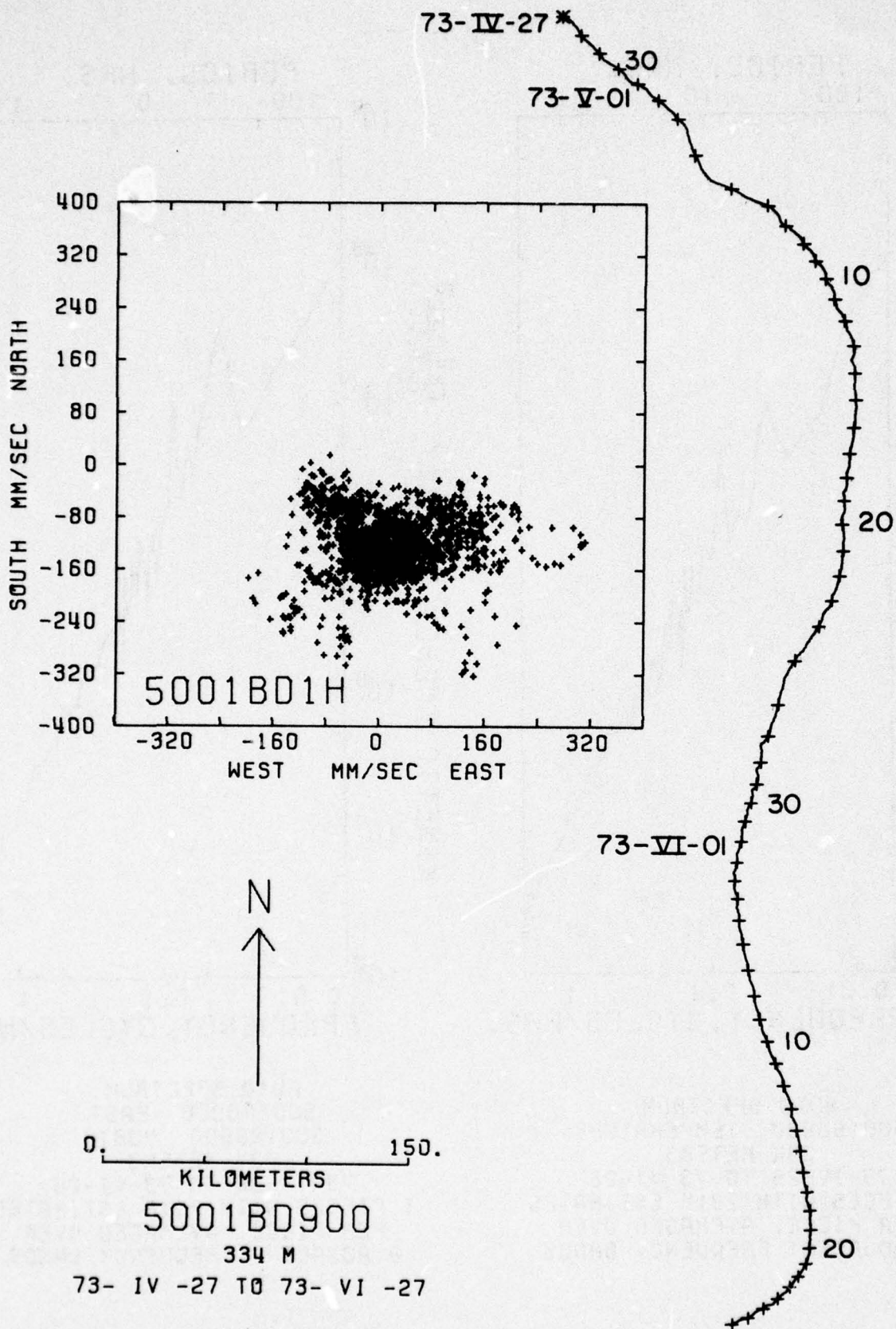
VARIABLE	TEMP1	TEMP2
UNITS	DEGREES C.	DEGREES C.
MEAN	17.757	17.747
STD. ERR.	.350E-2	.350E-2
VARIANCE	.721E-1	.724E-1
STD. DEV.	.269	.269
KURTOSIS	2.154	2.154
SKEWNESS	-.523	-.522
MINIMUM	17.154	17.143
MAXIMUM	18.243	18.234

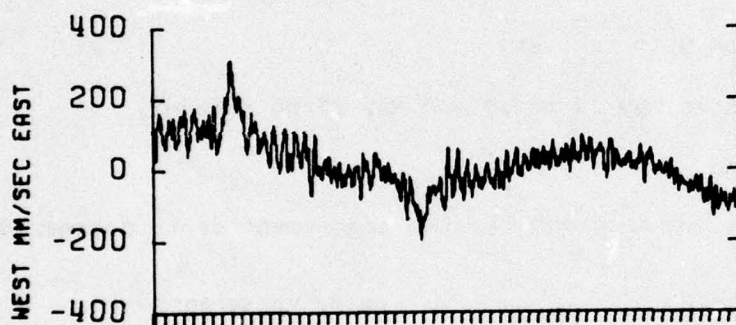
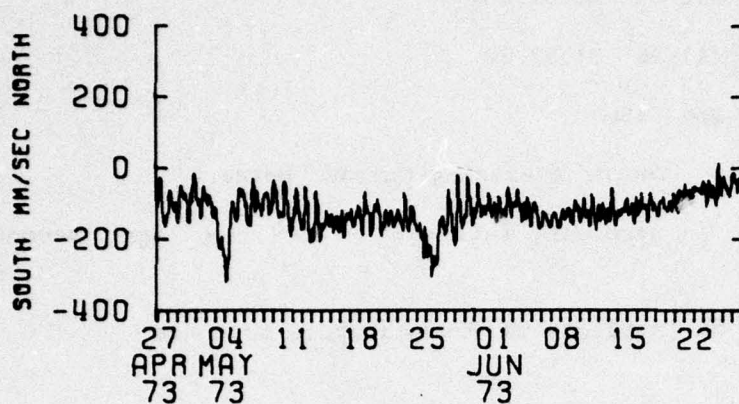
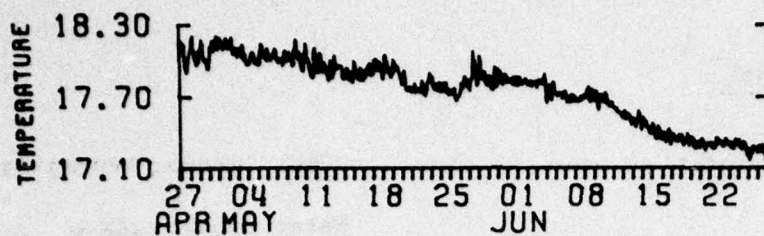


AUTO SPECTRUM
 500180900 TEMPERATURE
 334 METERS
 73-IV-26 TO 73-VI-26
 1 PIECES WITH 2916 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS

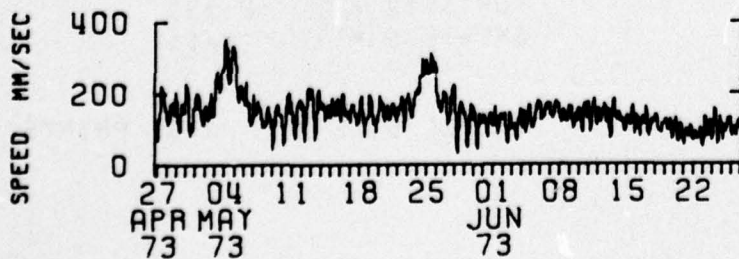
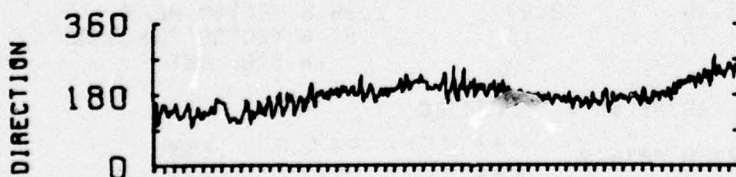


AUTO SPECTRUM
 500180900 EAST
 500180900 NORTH
 334 METERS
 73-IV-26 TO 73-VI-26
 1 PIECES WITH 2916 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS





5001BD1H
334 M



DATA NUMBER 5003A

Instrument No.: V-0156

Type: Vector Averaging Current Meter

Depth: 681 m

Water Depth: 5456 m

Start time: 73-April-04 08.07.30.

Stop time: 73-April-26 04.52.30.

Duration: 21d 20h 45m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

Instrument owned by Institute of Oceanographic Sciences

Mooring snagged by tow fish April 26

Compass - good

Vane - sticky June 9 to recovery

Rotor - At threshold May 14 to 18 and May 27 to recovery

Temperature - good

Data processed in two sections because instrument depth decreased by 42 meters

STATS

DATA/ 5003AC900A

	EAST	NORTH	SPEED	*****	EAST & NORTH	*****
MEAN	72.68	-65.04	108.58	*****	COVARIANCE	-211.32
STD. ERR.	1.04	1.01	.96	*****	STD. ERR. OF COVARIANCE	111.77
VARIANCE	2281.38	2155.01	1820.04	*****	STD. DEV. OF COVARIANCE	5122.10
STD. DEV.	47.55	46.42	43.82	*****	CORRELATION COEFFICIENT	-.088
KURTOSIS	9.14	2.97	2.56	*****	VECTOR MEAN	97.59
SKEWNESS	.08	.19	.22	*****	VECTOR VARIANCE	2208.19
				*****	STD. DEV.	46.99

UNITS OF RAW DATA VARIABLES = MM/SEC

SAMPLE SIZE = 2100 POINTS

*** TEMPERATURE ***
*** DEGREES C. ***

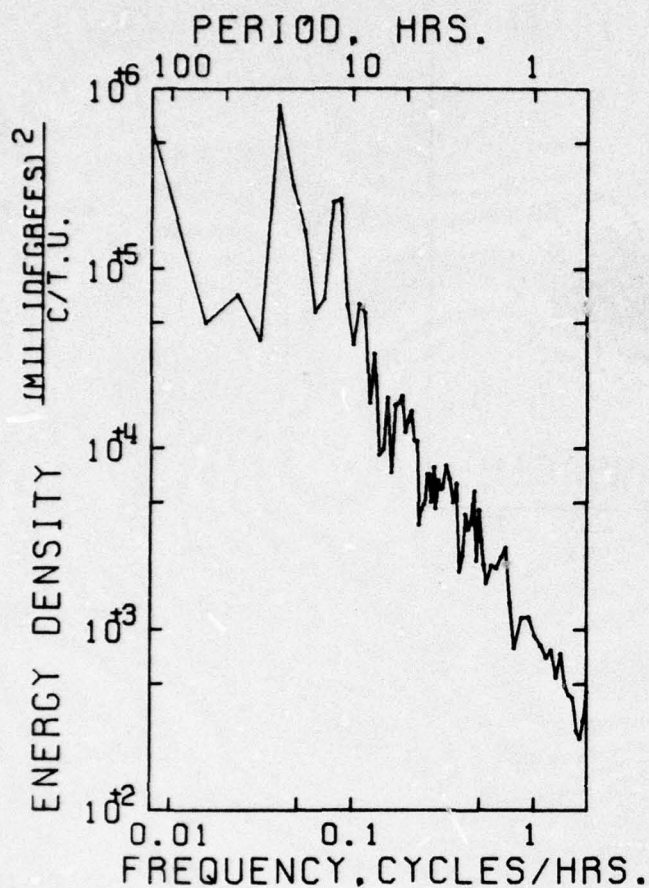
SPANNING RANGE

FROM 73- IV -04 08.07.30
TO 73- IV -26 04.52.30

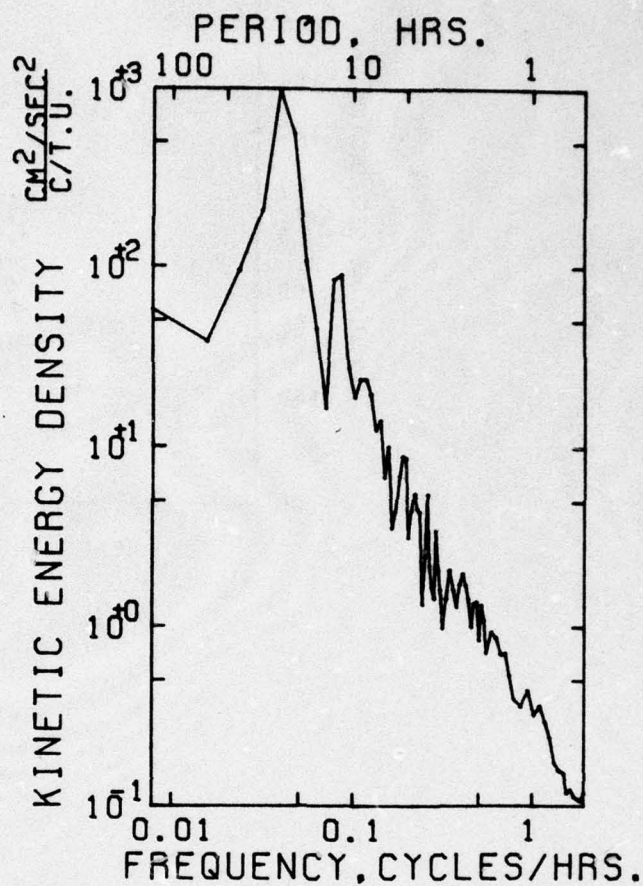
DURATION 21 DAYS 20 H 45 M

MEAN = 13.915 STD ERR = .004
VARIANCE = .031
STD. DEV. = .177
KURTOSIS = 2.530
SKEWNESS = -.111

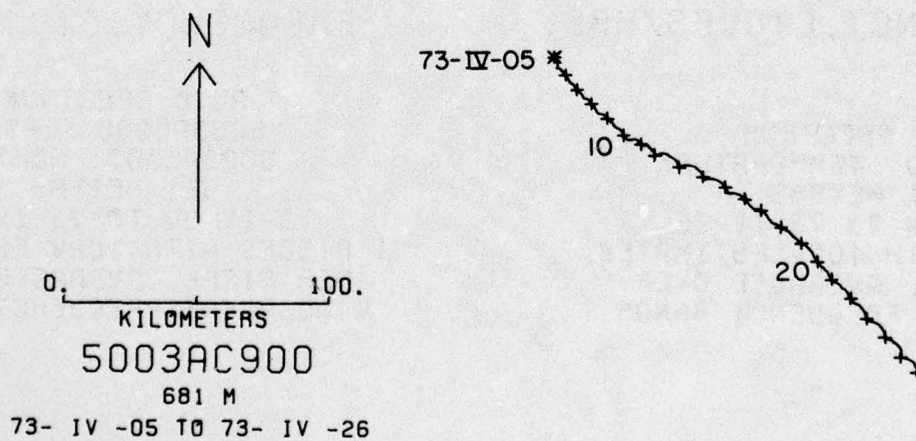
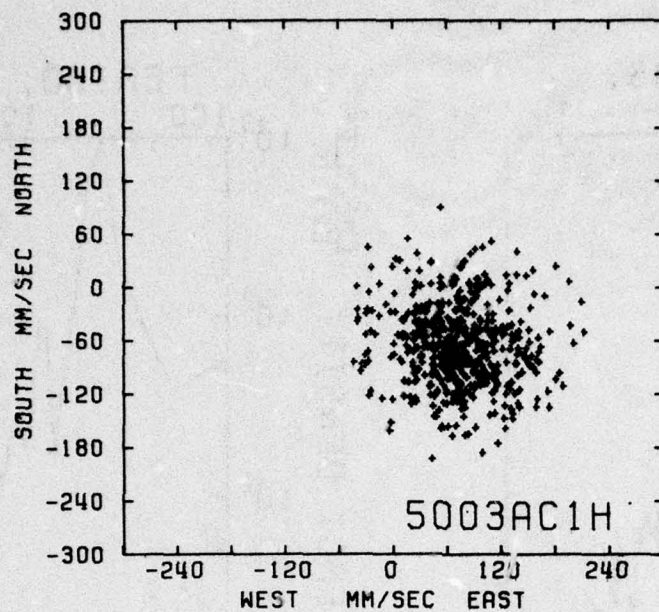
SAMPLE SIZE = 2100 POINTS

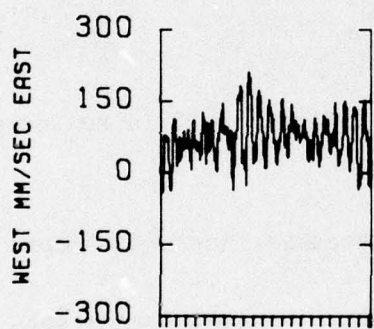
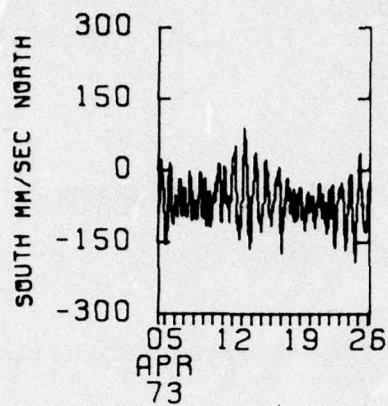
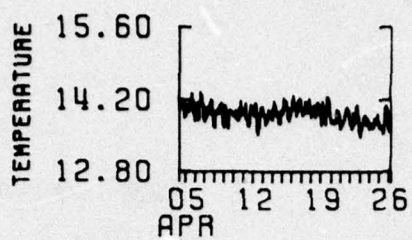


AUTO SPECTRUM
 5003AC900 TEMPERATURE
 681 METERS
 73-IV-04 TO 73-IV-25
 1 PIECES WITH 1024 ESTIMATES
 PER PIECE. AVERAGED OVER
 4 ADJACENT FREQUENCY BANDS

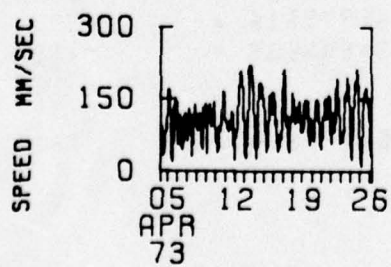
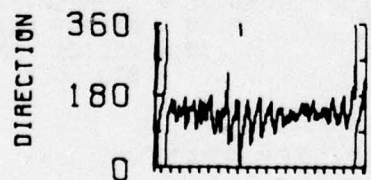


AUTO SPECTRUM
 5003AC900 EAST
 5003AC900 NORTH
 681 METERS
 73-IV-04 TO 73-IV-25
 1 PIECES WITH 1024 ESTIMATES
 PER PIECE. AVERAGED OVER
 4 ADJACENT FREQUENCY BANDS





5003AC1H
681 M



DATA NUMBER 5003B

Instrument No.: V-0156

Type: Vector Averaging Current Meter

Depth: 639 m

Water Depth: 5456 m

Start time: 73-April-26 18.07.30.

Stop time: 73-May-13 23.52.30.

Duration: 17d 5h 43m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

Instrument owned by Institute of Oceanographic Sciences

Mooring snagged by towfish April 26

Compass - good

Vane - sticky June 9 to recovery

Rotor - at threshold May 14 to 18 and May 27 to recovery

Temperature - good

Data processed in two sections because instrument depth decreased by 42 meters

STATS

DATA/ 5003BC900A

	EAST	NORTH	SPEED	*****	EAST & NORTH	*****
MEAN	61.18	-73.35	105.50	*****	COVARIANCE	-436.47
STD. ERR.	1.14	.95	1.00	*****	STD. ERR. OF COVARIANCE	124.44
VARIANCE	2182.83	1509.40	1880.32	*****	STD. DEV. OF COVARIANCE	5089.90
STD. DEV.	48.50	38.77	40.75	*****	CORRELATION COEFFICIENT	-.242
KURTOSIS	2.82	3.60	2.58	*****	VECTOR MEAN	95.52
SKEWNESS	-.08	.41	.99	*****	VECTOR VARIANCE	1839.01
				*****	STD. DEV.	42.81

UNITS OF RAW DATA VARIABLES = MM/SEC

SAMPLE SIZE = 1656 POINTS

*** TEMPERATURE ***
*** DEGREES C. ***

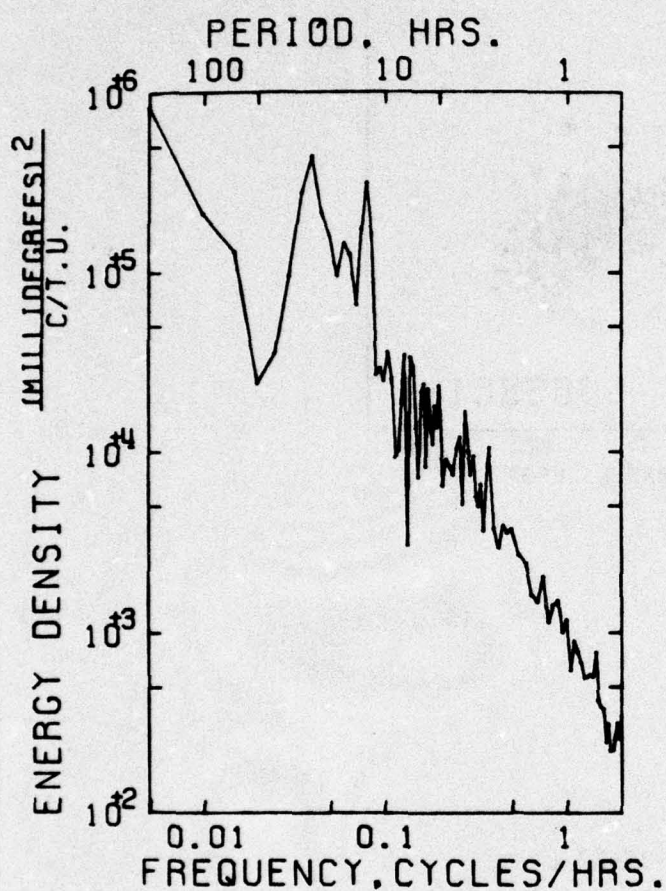
SPANNING RANGE

FROM 73- IV -26 18.07.30
TO 73- V -13 23.52.30

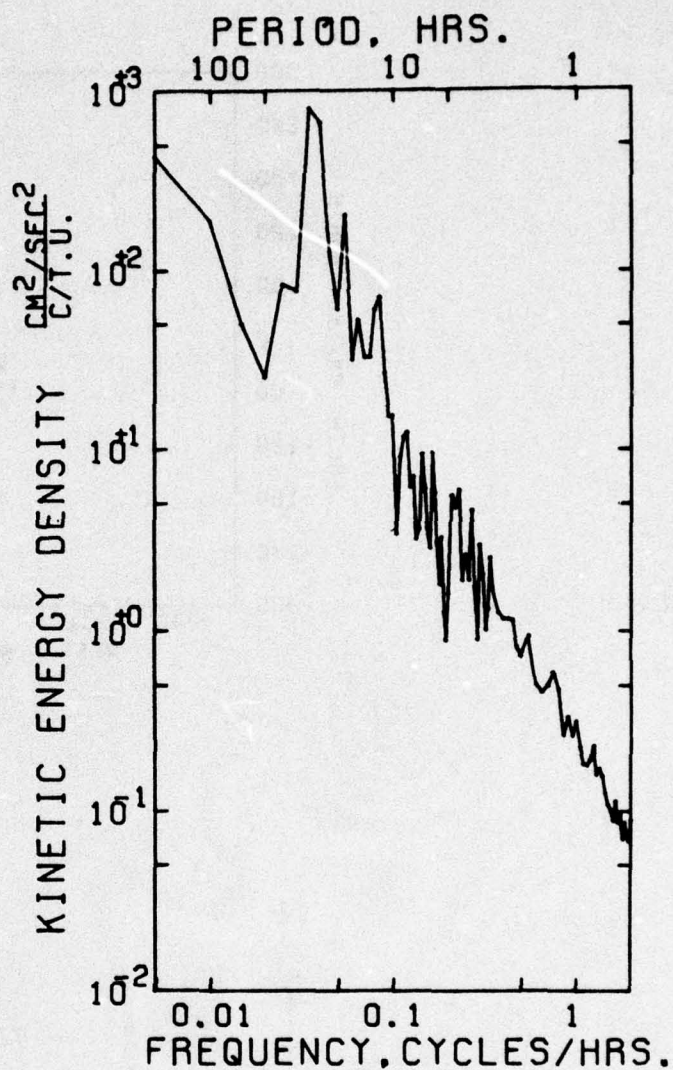
DURATION 17 DAYS 5 H 45 M

MEAN	=	14.804	STD ERR	=	.004
VARIANCE	=	.024			
STD. DEV.	=	.154			
KURTOSIS	=	2.829			
SKEWNESS	=	-.104			

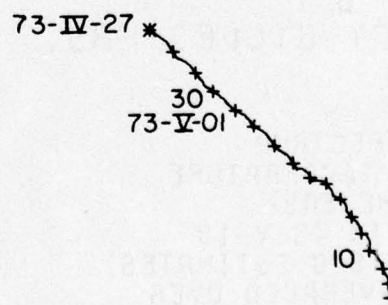
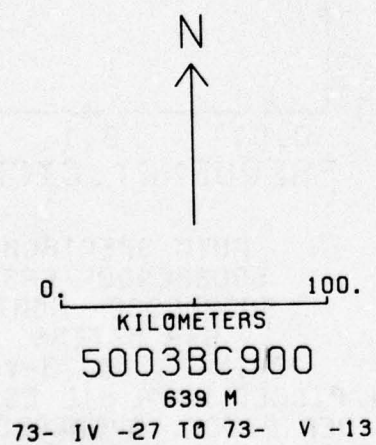
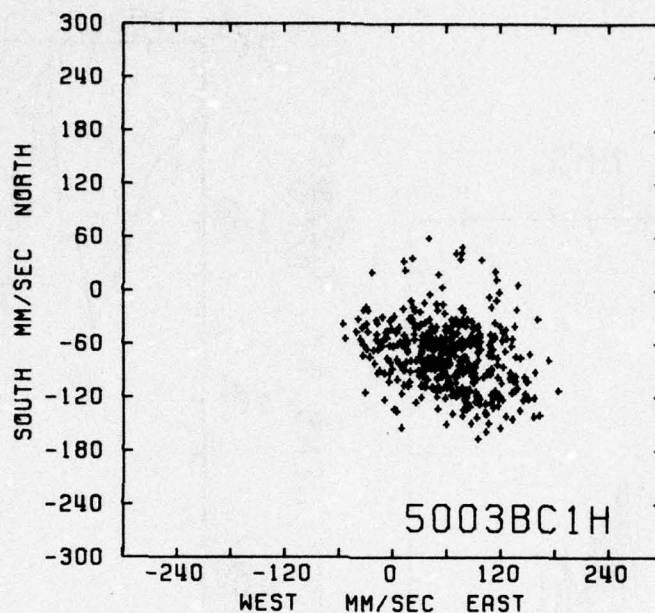
SAMPLE SIZE = 1656 POINTS

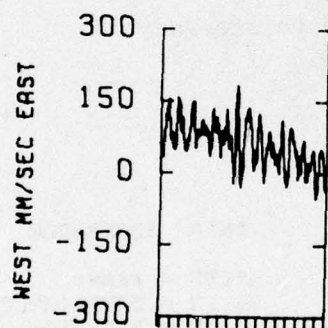
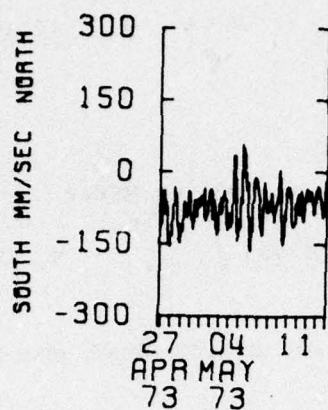
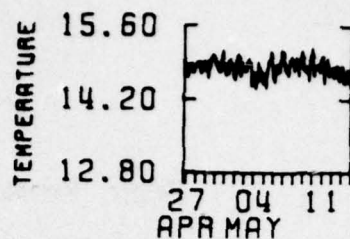


AUTO SPECTRUM
5003BC900 TEMPERATURE
639 METERS
73-IV-26 TO 73-V-13
1 PIECES WITH 810 ESTIMATES
PER PIECE. AVERAGED OVER
2 ADJACENT FREQUENCY BANDS

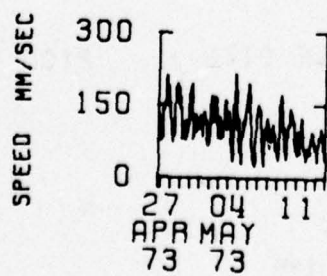
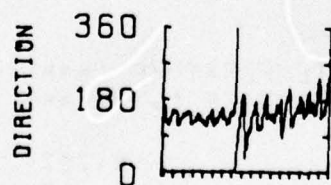


AUTO SPECTRUM
5003BC900 EAST
5003BC900 NORTH
639 METERS
73-IV-26 TO 73-V-13
1 PIECES WITH 810 ESTIMATES
PER PIECE. AVERAGED OVER
2 ADJACENT FREQUENCY BANDS





5003BC1H
639 M



DATA NUMBER 5005

Instrument No.: V-0201

Type: Vector Averaging Current Meter

Depth: 1382 m

Water Depth: 5456 m

Start time: 73-April-04 08.07.30.

Stop time: 73-April-26 04.52.30.

Duration: 21d 20h 45m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

Mooring snagged by towfish April 26, slight depth change

Compass - good

Vane - stuck May 9 to recovery

Rotor - at threshold from April 26 to recovery

Temperature - good

STATS

DATA/ 50050900A

MEAN	EAST	NORTH	SPEED	*****	EAST & NORTH	*****
	-11.75	-50.10	60.18	* COVARIANCE		-72.76
STD. ERR.	.62	.55	.48	* STD. ERR. OF COVARIANCE		33.26
VARIANCE	817.29	644.89	488.69	* STD. DEV. OF COVARIANCE		1524.07
STD. DEV.	28.59	25.39	22.11	* CORRELATION COEFFICIENT		-.100
KURTOSIS	2.37	2.56	2.95	* VECTOR MEAN		51.48
SKEWNESS	.16	-.01	.04	* VECTOR VARIANCE		731.09
				* STD. DEV.		27.04

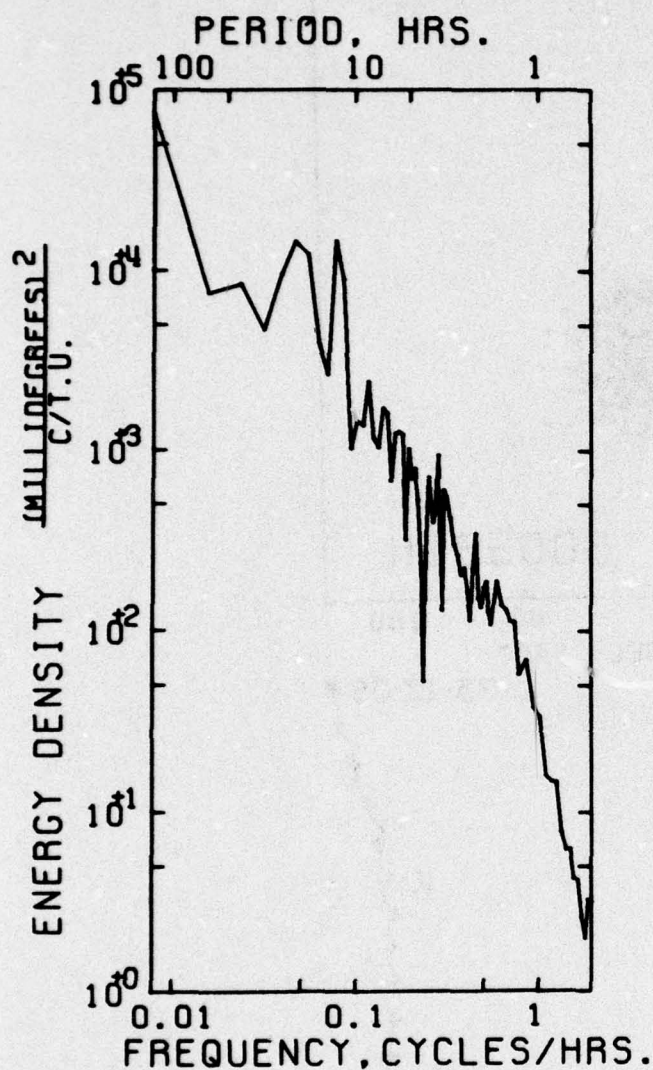
UNITS OF RAW DATA VARIABLES = MM/SEC

SAMPLE SIZE = 2100 POINTS *** TEMPERATURE ***
*** DEGREES C. ***

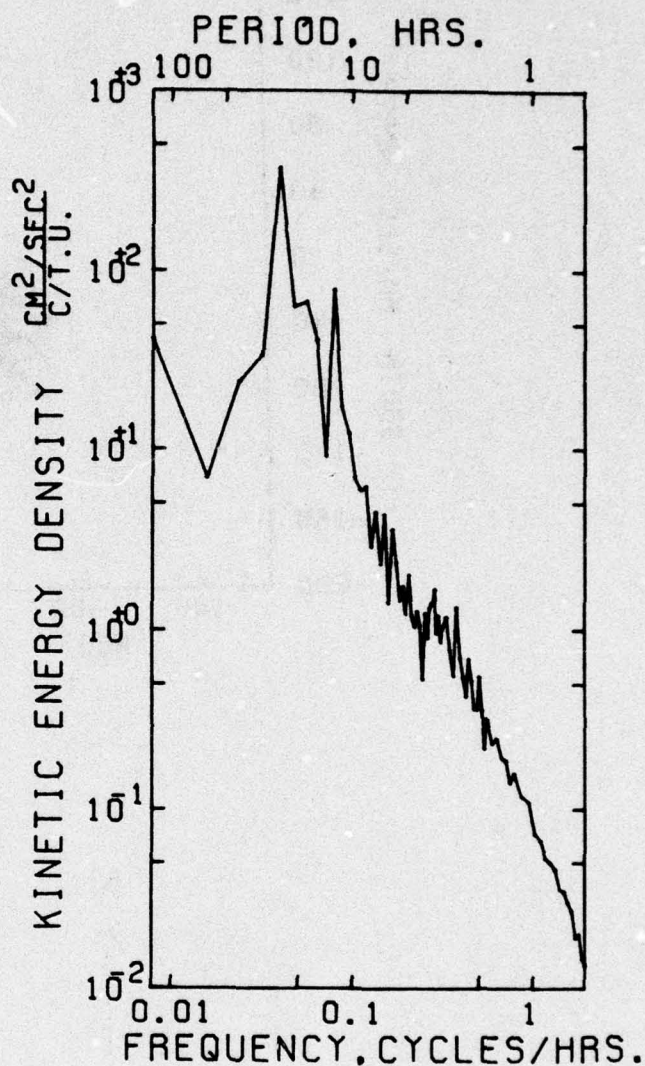
SPANNING RANGE

FROM	73- IV -04	08.07.30	MEAN	4.707	STD ERR	.002
TO	73- IV -26	04.52.30	VARIANCE	.007		
			STD. DEV.	.081		
			KURTOSIS	1.726		
			SKEWNESS	.331		

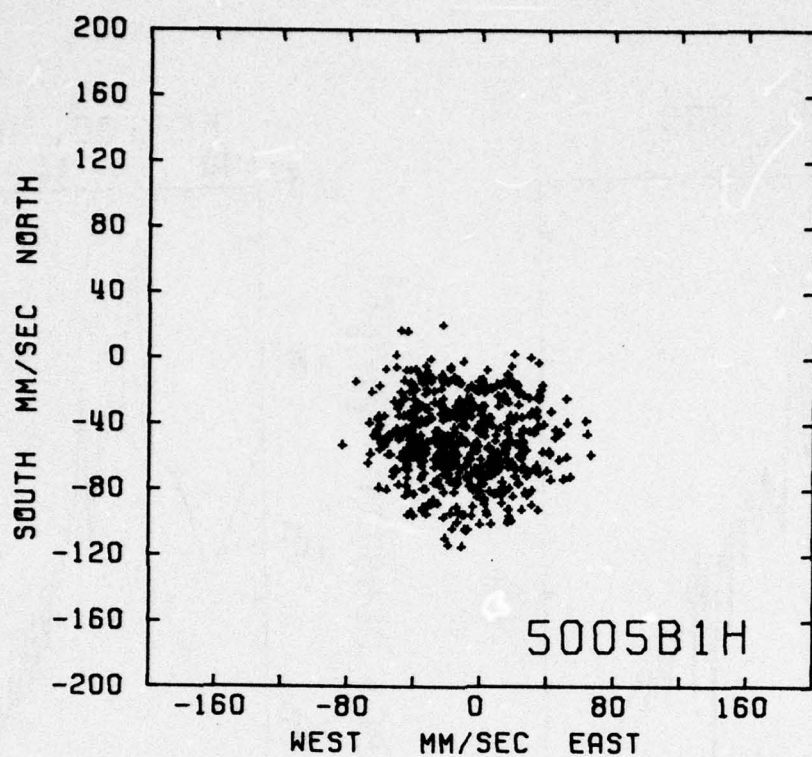
SAMPLE SIZE = 2100 POINTS



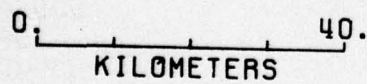
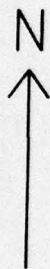
AUTO SPECTRUM
 50058900 TEMPERATURE
 1382 METERS
 73-IV-04 TO 73-IV-25
 1 PIECES WITH 1024 ESTIMATES
 PER PIECE. AVERAGED OVER
 4 ADJACENT FREQUENCY BANDS



AUTO SPECTRUM
 50058900 EAST
 50058900 NORTH
 1382 METERS
 73-IV-04 TO 73-IV-25
 1 PIECES WITH 1024 ESTIMATES
 PER PIECE. AVERAGED OVER
 4 ADJACENT FREQUENCY BANDS



73-IV-05 *

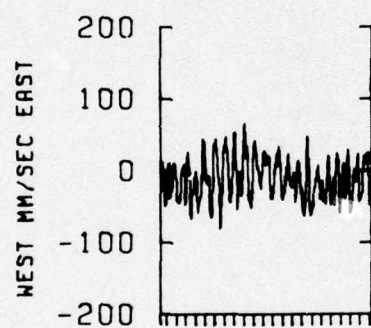
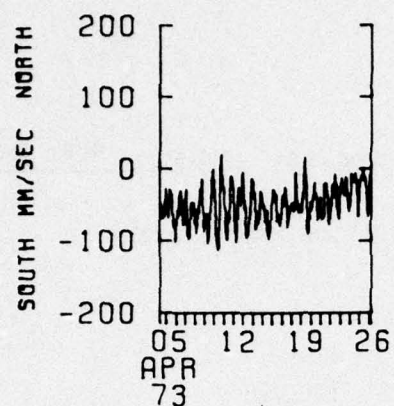
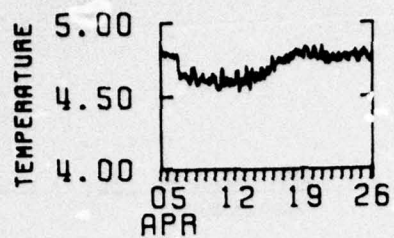


5005B900

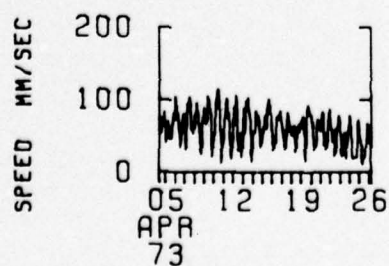
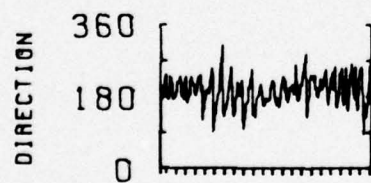
1382 M

73- IV -05 TO 73- IV -26





5005B1H
1382 M



Mooring No. 501

Set 1973 April 4 28° 50.1'N 69° 18.0'W
Year Month Day Latitude Longitude

Set by G. Tupper - R. Heinmiller Ship R.V. CHAIN Cruise 112 Leg 2

Retrieved 1973 June 30
Year Month Day

Retrieved by J. Gifford - R. Heinmiller Ship R.V. CHAIN Cruise 112 Leg 6

Purpose of Mooring: Mooring #7 of MODE 1 array

Mooring Type: Subsurface

Key	Data Number	Instrument Number	Type	Depth Meters	Comments
*	5011	V-0164	VACM	421	
#	5012	#35	T/P	523	M.I.T.
+	5013	M-198t	850	723	
	5014	#53	T/P	925	M.I.T.
*	5015	V-0128	VACM	1425	
*	5016	V-0204	VACM	2936	
*	5017	M-195t	850t	3951	
*	5018	M-284	850	5279	

Water depth 5379

COMMENTS ON MOORING:

STATION 501

RADIO FLOAT
WITH LIGHT
2 m 1/2" CHAIN
2 m 3/8" CHAIN

12-16" + 2-17" GLASS BALLS IN HARD HATS ON 14 m
3/8" CHAIN

VACM — 5011

2 m 3/8" CHAIN

96 m 3/16" WIRE

3 m 3/8" CHAIN

T/P — 5012

196 m 3/16" WIRE

CURRENT METER — 5013

2 m 3/8" CHAIN

198 m 3/16" WIRE

T/P — 5014

199 m 3/16" WIRE

1 m 3/8" CHAIN

280 m 3/16" WIRE

10 16" GLASS BALLS IN HARD HATS ON 15 m 3/8" CHAIN

VACM — 5015

500 m 3/16" WIRE

35 m 3/8" DACRON

(CONTINUED)

(CONTINUED)

458 m 3/8" DACRON

457 m 3/8" DACRON

5 16" GLASS BALLS IN HARD HATS ON 5 m 3/8" CHAIN

VACM — 5016

40 m

456 m

456 m

CURRENT METER — 5017

335 m

447 m

457 m

CURRENT METER — 5018

57 m

15 16" GLASS BALLS IN HARD HATS ON 15 m 3/8" CHAIN

ACOUSTIC RELEASE, TRANSPONDING

15 m 3/4" NYLON

3 m 1/2" CHAIN

STIMSON ANCHOR, 2500 LBS.

3/8" DACRON

DATA NUMBER 5011

Instrument No.: V-0164

Type: Vector Averaging Current Meter

Depth: 421 m

Water Depth: 5379 m

Start time: 73-April-04 20.07.30.

Stop time: 73-May-23 23.52.30.

Duration: 49d 3h 45m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

Compass - good

Vane - good

Rotor - suspicious May 24 to June 12

Temperature - good

STATS

DATA/ 5011C900A

MEAN	=	EAST	NORTH	SPEED	*	*****	EAST & NORTH	*****
STD. ERR.	=	64.39	-26.89	81.76	*	COVARIANCE	=	53.35
VARIANCE	=	.68	.48	.56	*	STD. ERR. OF COVARIANCE	=	47.76
STD. DEV.	=	2192.36	1109.87	1486.44	*	STD. DEV. OF COVARIANCE	=	3280.96
KURTOSIS	=	46.82	33.31	38.55	*	CORRELATION COEFFICIENT	=	.034
SKEWNESS	=	3.09	4.89	2.73	*	VECTOR MEAN	=	69.77
	=	-.04	.02	.73	*	VECTOR VARIANCE	=	1851.11
					*	STD. DEV.	=	40.63

UNITS OF RAW DATA VARIABLES = MM/SEC

SAMPLE SIZE = 4720 POINTS

*** TEMPERATURE ***
*** DEGREES C. ***

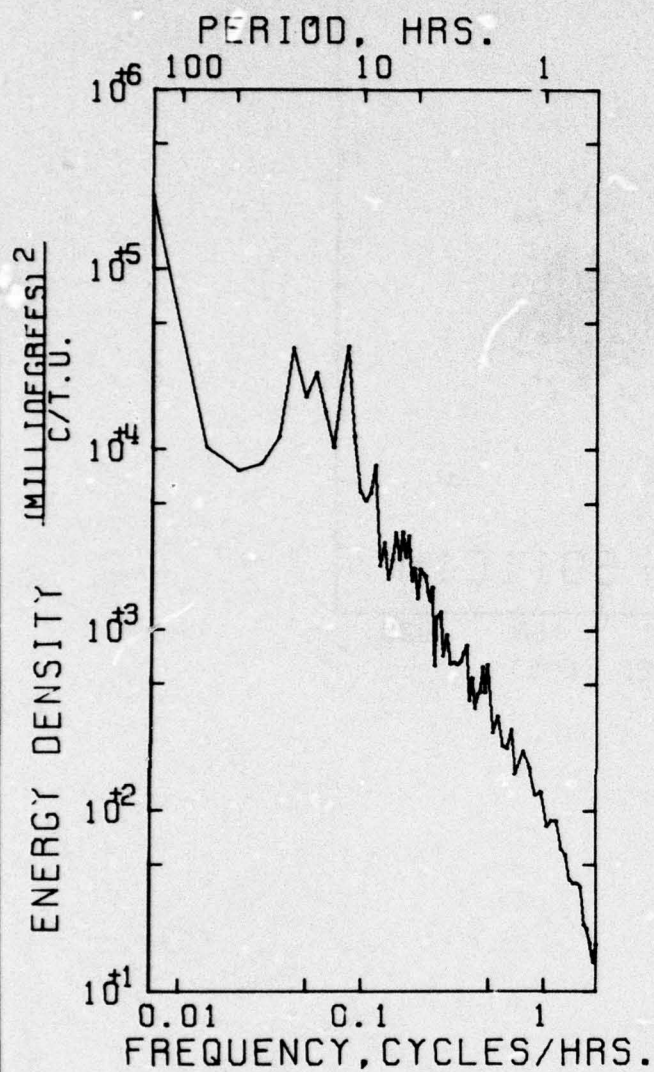
SPANNING RANGE

FROM 73- IV -04 20.07.30
TO 73- V -23 23.52.30

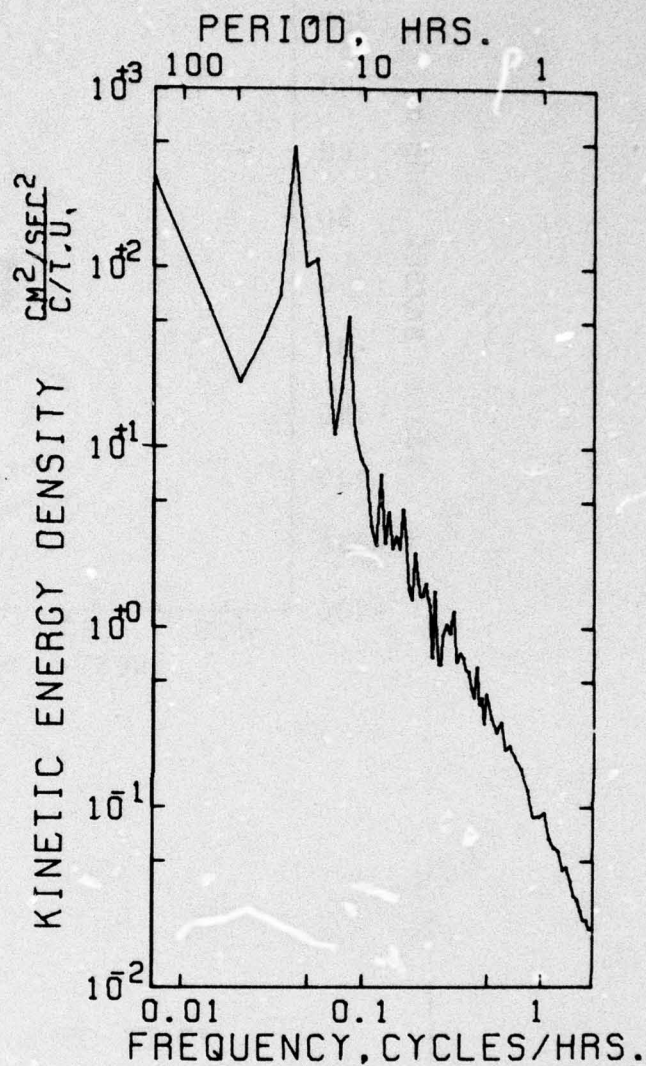
DURATION 49 DAYS 3 H 45 M

MEAN	=	17.232	STD ERR	=	.002
VARIANCE	=	.016			
STD. DEV.	=	.125			
KURTOSIS	=	2.801			
SKEWNESS	=	.129			

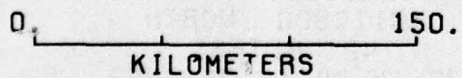
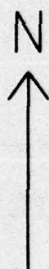
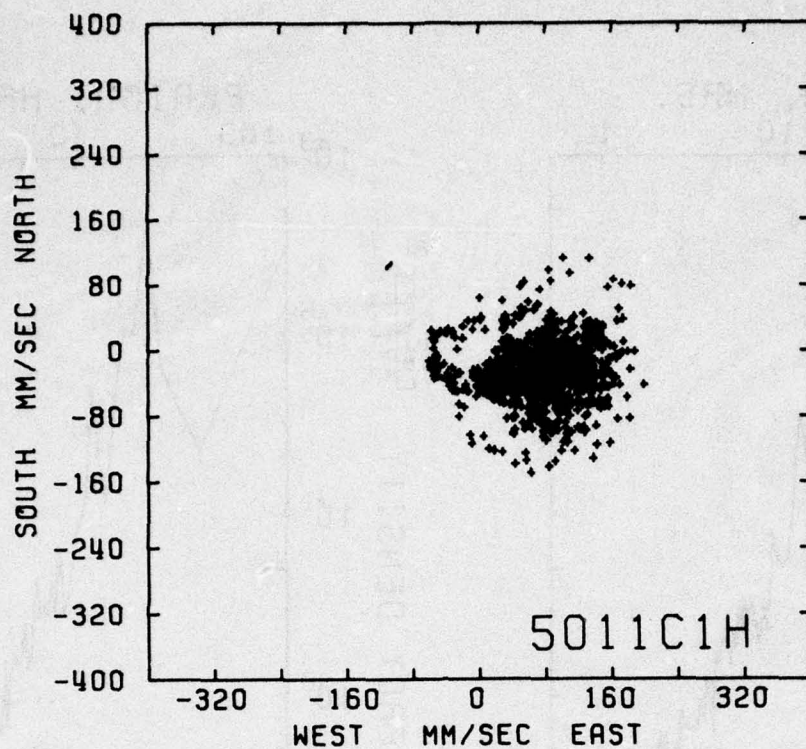
SAMPLE SIZE = 4720 POINTS



AUTO SPECTRUM
 5011C900 TEMPERATURE
 421 METERS
 73-IV-04 TO 73-V-21
 1 PIECES WITH 2304 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS



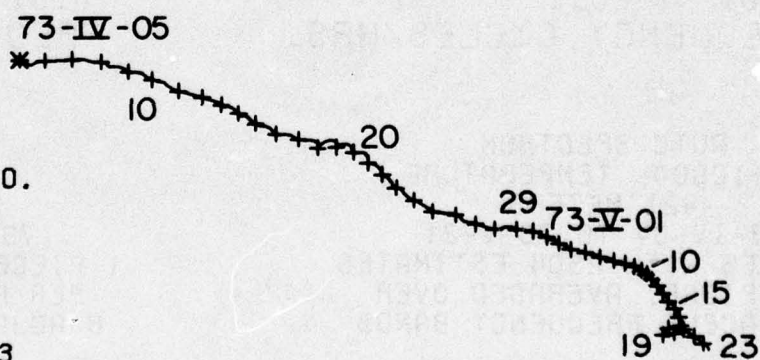
AUTO SPECTRUM
 5011C900 EAST
 5011C900 NORTH
 421 METERS
 73-IV-04 TO 73-V-22
 1 PIECES WITH 2304 ESTIMATES
 PER PIECE. AVERAGED OVER
 8 ADJACENT FREQUENCY BANDS

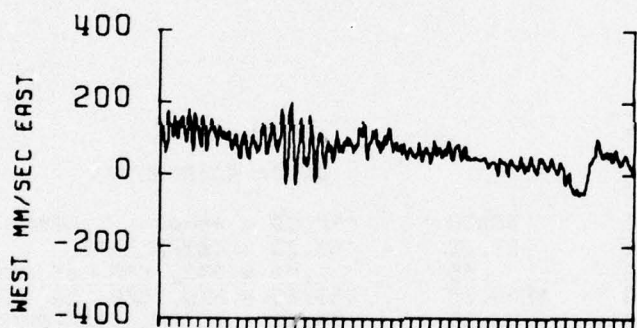
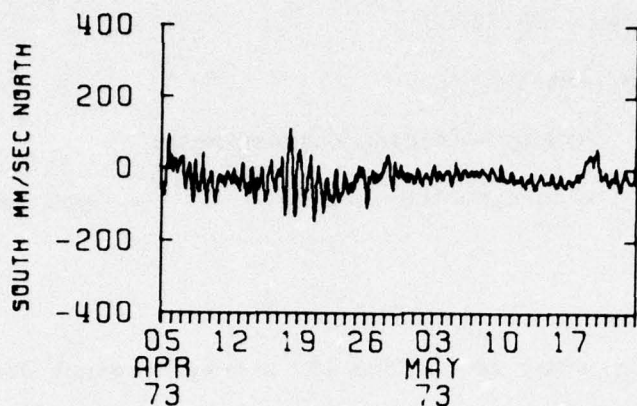
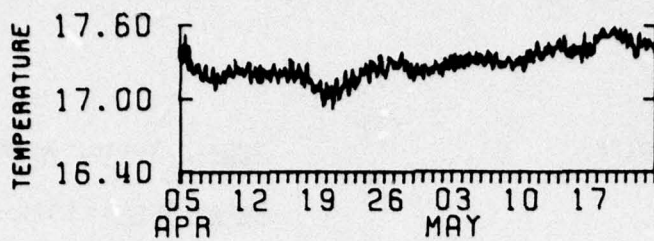


5011C900

421 M

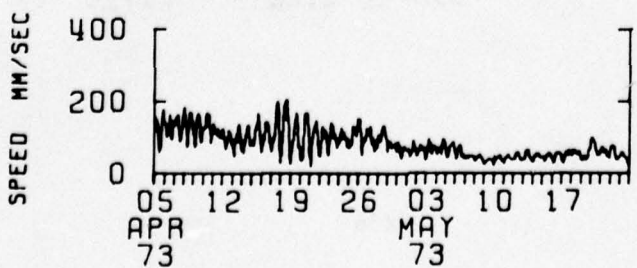
73- IV -05 TO 73- V -23





5011C1H

421 M



DATA NUMBER 5015

Instrument No.: V-0128

Type: Vector Averaging Current Meter

Depth: 1425 m

Water Depth: 5379 m

Start time: 73-April-04 16.37.00.

Stop time: 73-May-24 05.22.00.

Duration: 49d 12h 45m

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

Compass - good

Vane - slightly sticky May 24 to June 10, sticky to stuck June 24 to recovery

Rotor - good

Temperature - good

STATS

DATA/ 5015F900A

MEAN	=	EAST	NORTH	SPEED	=	*****	EAST & NORTH	*****
STD. ERR.	=	-7.01	-39.28	55.35	=	COVARIANCE	=	49.71
VARIANCE	=	.36	.59	.40	=	STD. ERR. OF COVARIANCE	=	18.24
STD. DEV.	=	601.50	1828.18	757.69	=	STD. DEV. OF COVARIANCE	=	1258.15
KURTOSIS	=	24.53	40.35	27.53	=	CORRELATION COEFFICIENT	=	.050
SKEWNESS	=	2.94	2.12	2.00	=	VECTOR MEAN	=	39.90
		.08	.13	.99	=	VECTOR VARIANCE	=	1114.84
					=	STD. DEV.	=	33.39

UNITS OF RAW DATA VARIABLES = MM/SEC

SAMPLE SIZE = 4756 POINTS

*** TEMPERATURE ***

*** DEGREES C. ***

SPANNING RANGE

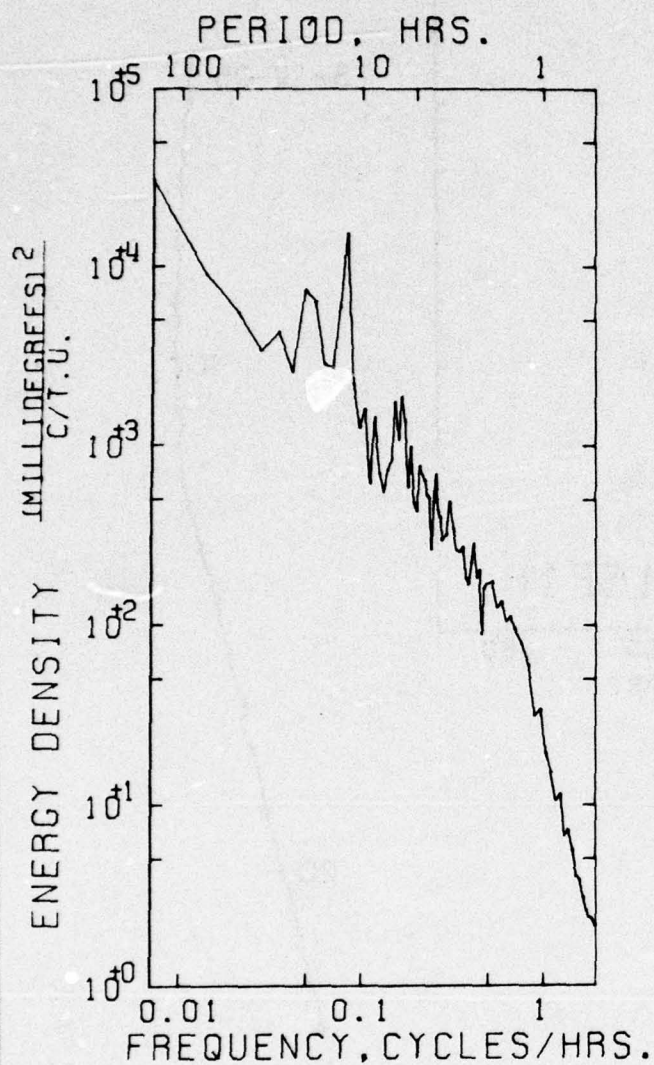
FROM 73- IV -04 16.37.00

TO 73- V -24 05.22.00

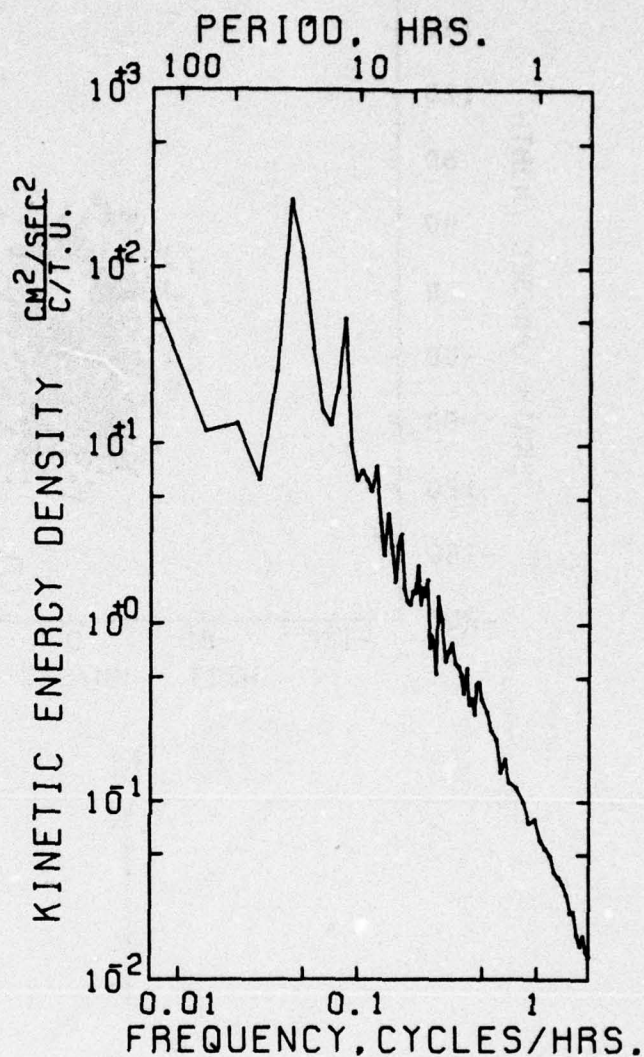
DURATION 49 DAYS 12 H 45 M

MEAN	=	4.549	STD ERR	=	.001
VARIANCE	=	.004			
STD. DEV.	=	.063			
KURTOSIS	=	2.521			
SKEWNESS	=	.690			

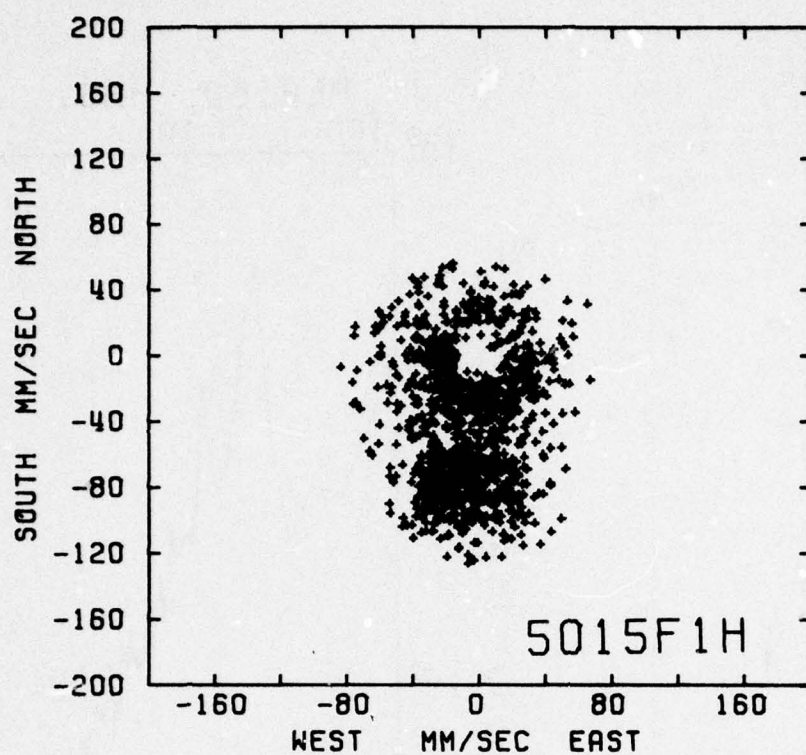
SAMPLE SIZE = 4756 POINTS



AUTO SPECTRUM
5015F900 TEMPERATURE
1425 METERS
73-IV-04 TO 73-V-21
1 PIECES WITH 2304 ESTIMATES
PER PIECE. AVERAGED OVER
8 ADJACENT FREQUENCY BANDS



AUTO SPECTRUM
5015F900 EAST
5015F900 NORTH
1425 METERS
73-IV-04 TO 73-V-22
1 PIECES WITH 2304 ESTIMATES
PER PIECE. AVERAGED OVER
8 ADJACENT FREQUENCY BANDS



5015F900

1425 M

73- IV -05 TO 73- V -24

73-IV-05 *

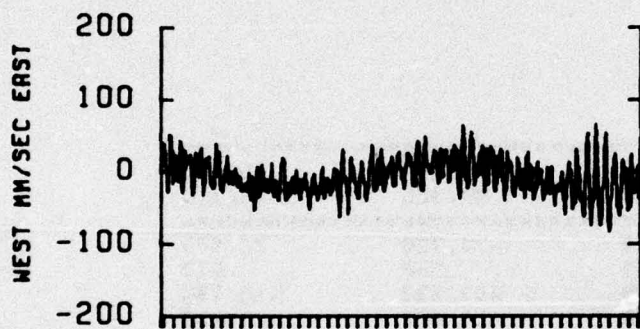
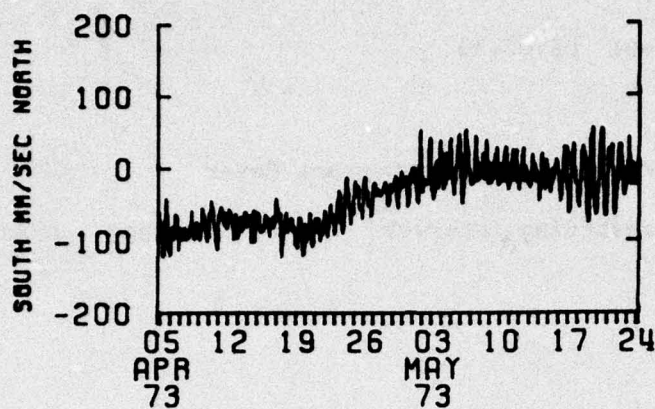
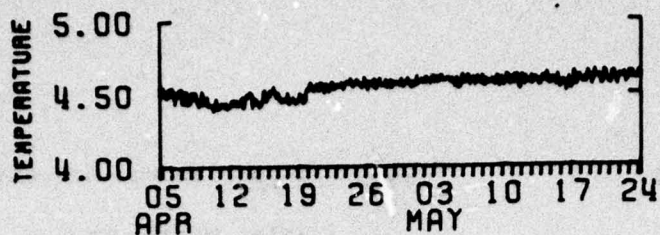
10

20

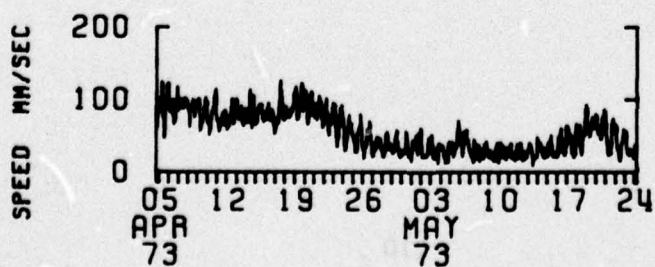
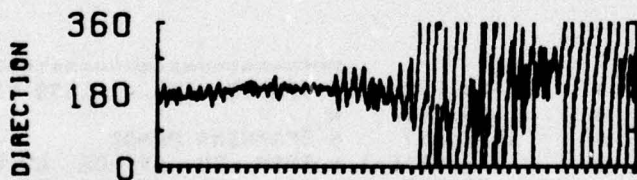
73-V-01

15

20



5015F1H
1425 M



DATA NUMBER 5016

Instrument No.: V-0204

Type: Vector Averaging Current Meter

Depth: 2936 m

Water Depth: 5379 m

Start time: 73-April-05 07.07.30

Stop time: 73-April-21 06.07.30

Duration: 15d 23h

Sampling scheme: Vector Averaging Current Meter

recording interval = 900 seconds

COMMENTS:

Compass - good

Vane - good

Rotor - below threshold April 21 to June 9, suspicious June 9 to recovery

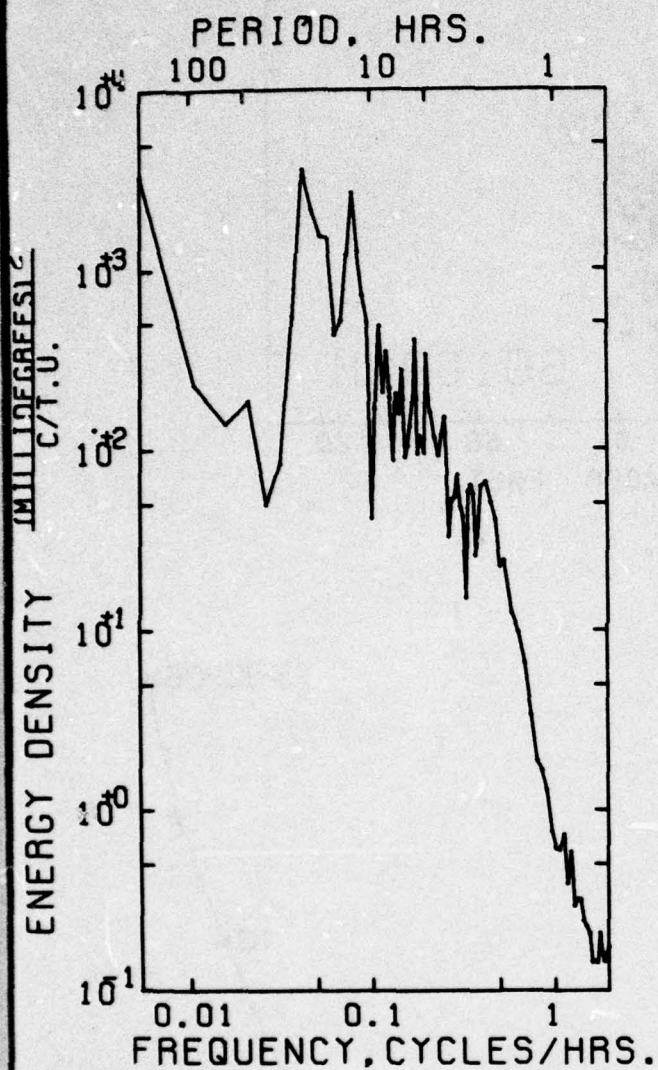
Temperature - good

DATA/ 5016A900

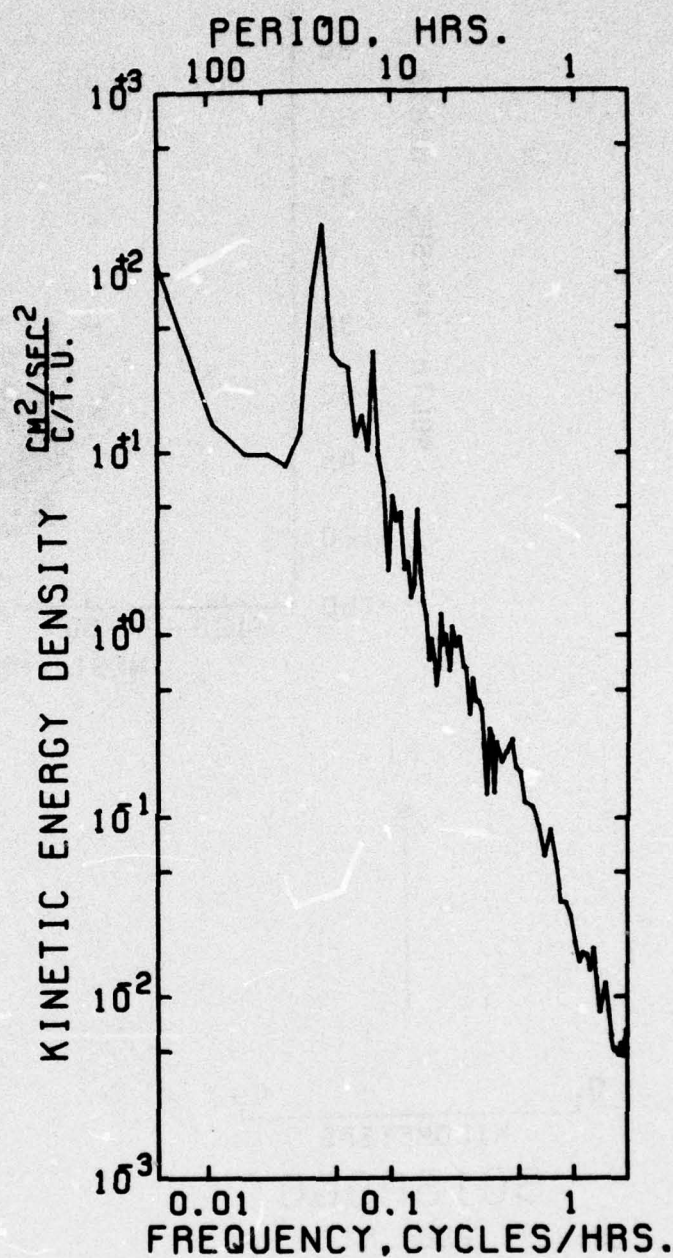
```
=====
VARIABLE  "      EAST      NORTH      SPEED
UNITS      "      MM/SEC    MM/SEC    MM/SEC
=====
MEAN       "      -28.728    -74.704    82.488
STD. ERR.  "           .488      .552      .517
VARIANCE   "      337.368    467.532    410.194
STD. DEV.  "      18.368     21.622     20.253
KURTOSIS   "       2.544      2.692      2.914
SKEWNESS   "      -.700E-1     .189      -.368
MINIMUM    "      -78.491    -129.000    20.000
MAXIMUM     "       15.412     -17.638    129.000
=====
```

=====
EAST & NORTH
=====

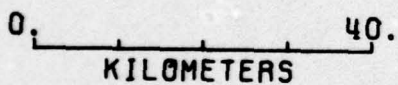
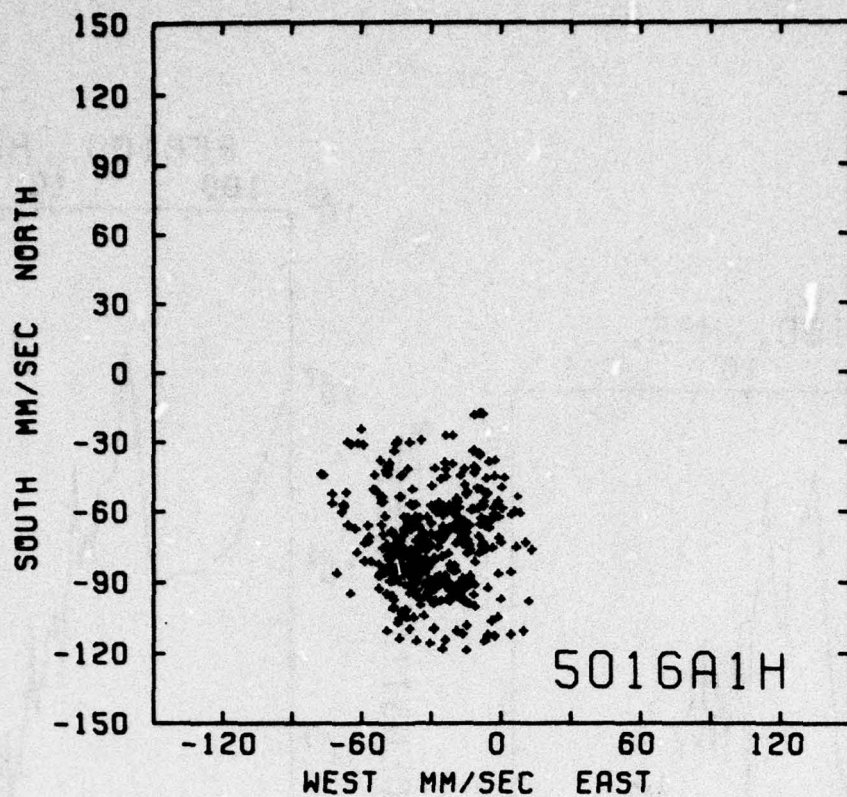
```
COVARIANCE      "      -34.872    " SAMPLE SIZE = 1533 POINTS
STD. ERR. OF COVARIANCE "      38.342    "
STD. DEV. OF COVARIANCE "     1422.957    " SPANNING RANGE
CORRELATION COEFFICIENT "      -.881E-1    " FROM 73- IV -05 07.07.30
VECTOR MEAN      "      80.038    " TO 73- IV -21 06.07.30
VECTOR VARIANCE   "      402.450    "
VECTOR STD. DEV.  "      20.081    " DURATION 15.96 DAYS
=====
```

AUTO SPECTRUM
5016A900 TEMPERATURE
2987 METERS
73-IV-05 TO 73-IV-20
1 PIECES WITH 750 ESTIMATES
PER PIECE. AVERAGED OVER
2 ADJACENT FREQUENCY BANDS



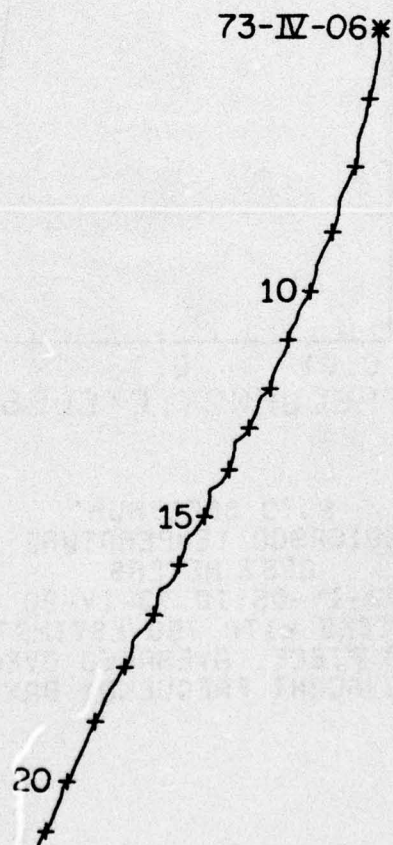
AUTO SPECTRUM
5016A900 EAST
5016A900 NORTH
2987 METERS
73-IV-05 TO 73-IV-20
1 PIECES WITH 750 ESTIMATES
PER PIECE. AVERAGED OVER
2 ADJACENT FREQUENCY BANDS

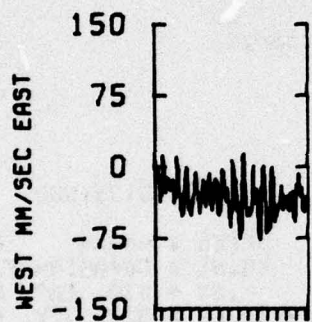
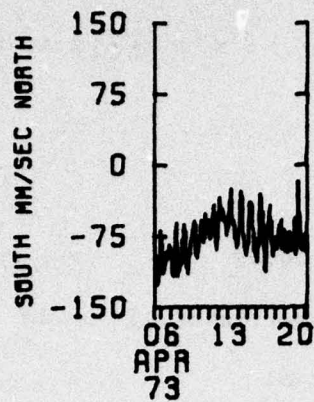
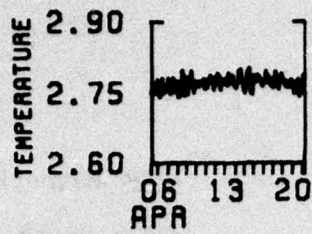


5016A900

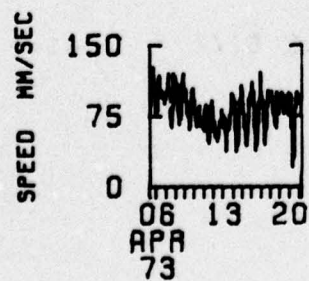
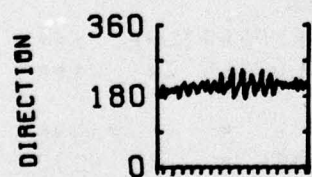
2987 M

73- IV -06 TO 73- IV -21





5016A1H
2987 M



DATA NUMBER 5017

Instrument No.: M-175t

Type: Magnetic Tape Recording Current Meter

Depth: 3951 m

Water depth: 5379 m

Start time: 73-April-05 06.00.34.

Stop time: 73-June-30 12.30.34.

Duration: 86d 06h 30m

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 13

recording interval = 1800 seconds

COMMENTS:

Compass had a correctable bit problem

All variables look good for entire record

STATS

DATA/ 501751800

MEAN	=	EAST	NORTH	SPEED	=	*****	EAST & NORTH	*****
STD. ERR.	=	-27.45	.02	44.81	=	COVARIANCE	=	129.72
VARIANCE	=	.30	.57	.33	=	STD. ERR. OF COVARIANCE	=	21.03
STD. DEV.	=	361.58	1331.68	458.64	=	STD. DEV. OF COVARIANCE	=	1353.47
KURTOSIS	=	18.53	36.48	21.42	=	CORRELATION COEFFICIENT	=	.182
SKEWNESS	=	3.18	2.88	3.05	=	VECTOR MEAN	=	27.45
		-.29	-.87	.88	=	VECTOR VARIANCE	=	858.63
					=	STD. DEV.	=	29.27

UNITS OF RAW DATA VARIABLES = MM/SEC

SAMPLE SIZE = 4142 POINTS

*** TEMPERATURE ***
*** DEGREES C. ***

SPANNING RANGE

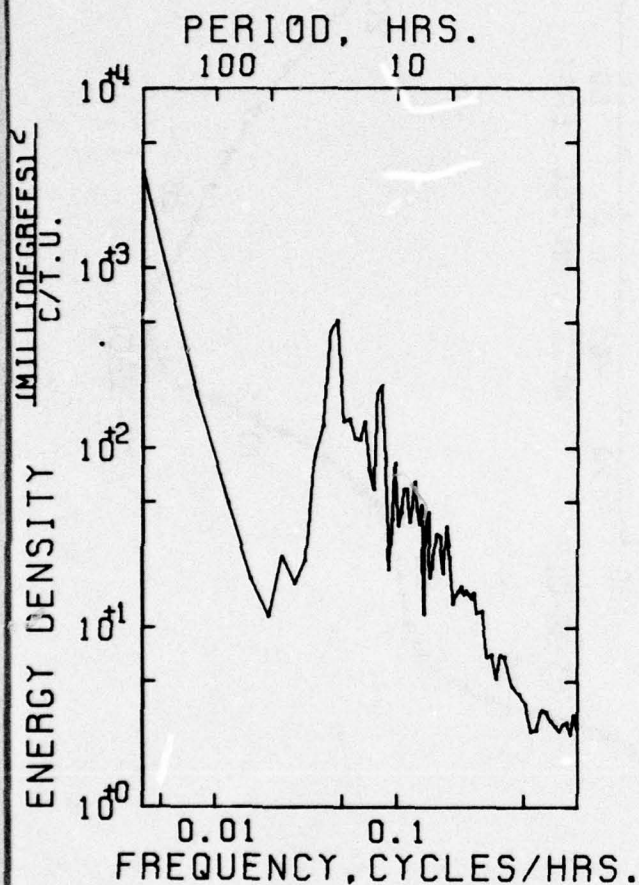
FROM 73- IV -05 06.00.34

TO 73- VI -30 12.30.34

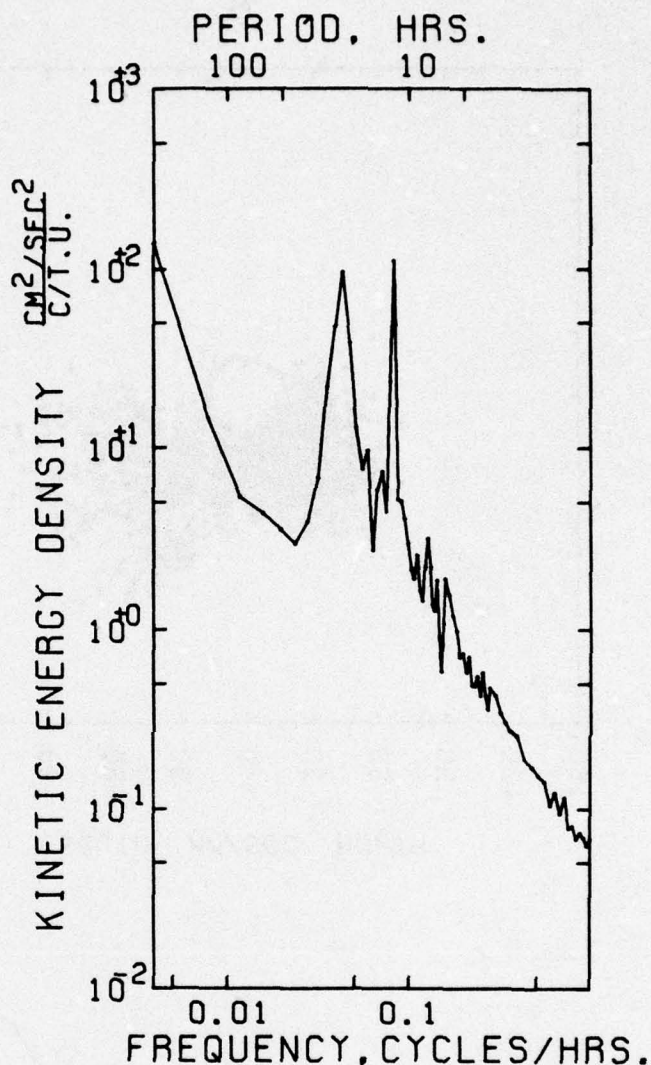
DURATION 86 DAYS 6 H 30 M

MEAN	=	2.336	STD ERR	=	.000
VARIANCE	=	.000			
STD. DEV.	=	.007			
KURTOSIS	=	3.194			
SKEWNESS	=	.022			

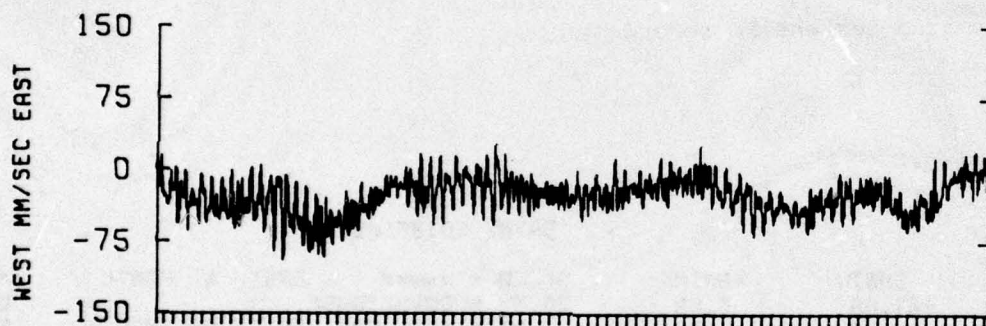
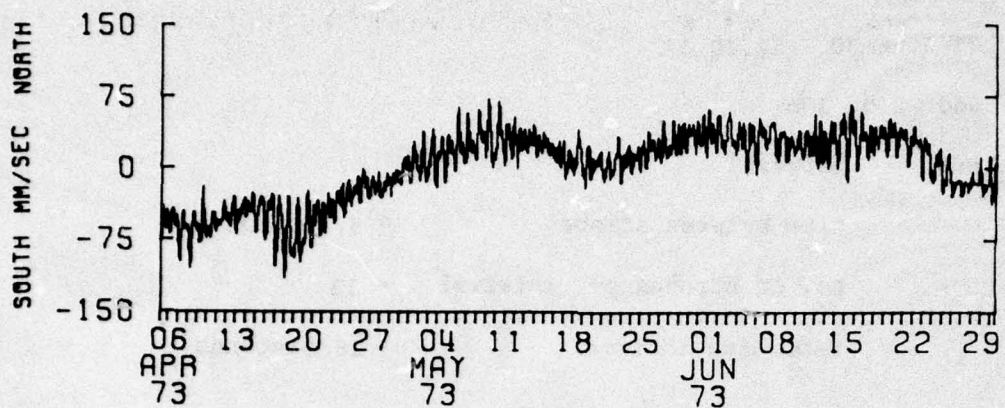
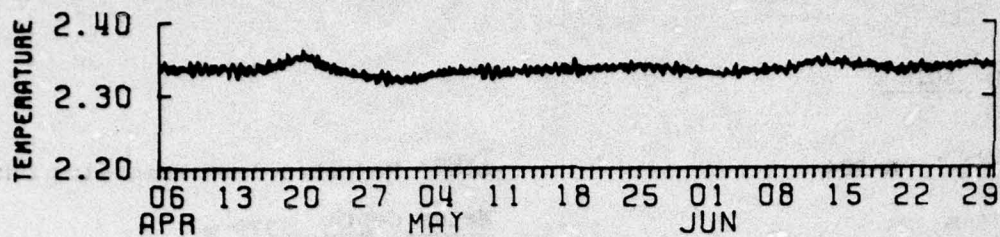
SAMPLE SIZE = 4142 POINTS



AUTO SPECTRUM
5017S1800 TEMPERATURE
3951 METERS
73-IV-05 TO 73-VI-29
1 PIECES WITH 2048 ESTIMATES
PER PIECE. AVERAGED OVER
8 ADJACENT FREQUENCY BANDS

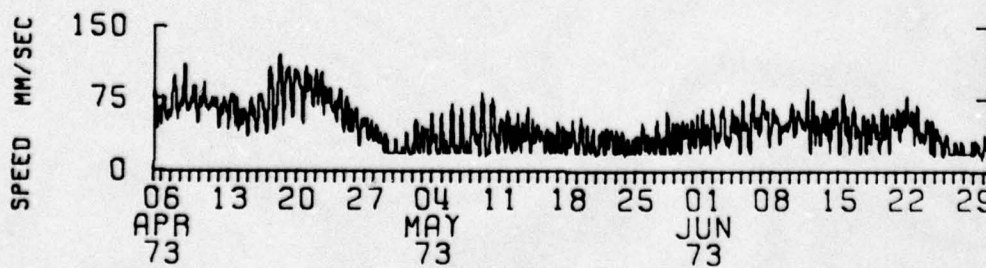


AUTO SPECTRUM
5017S1800 EAST
5017S1800 NORTH
3951 METERS
73-IV-05 TO 73-VI-29
1 PIECES WITH 2048 ESTIMATES
PER PIECE. AVERAGED OVER
8 ADJACENT FREQUENCY BANDS



5017S1H

3951 M



DATA NUMBER 5018

Instrument No.: M-284

Type: Magnetic Tape Recording Current Meter

Depth: 5279 m

Water depth: 5379 m

Start time: 73-April-04 15.10.37.

Stop time: 73-June-30 11.40.37.

Duration: 86d 20h 30m

Sampling scheme: Interval

time between strobes = 5.27seconds

no. of strobes per interval = 13

recording interval = 1800seconds

COMMENTS:

Instrument owned by the University of Rhode Island

All variables good for entire record

STATS

DATA/ 5018F1800

	EAST	NORTH	SPEED	EAST & NORTH	
MEAN	-27.86	5.58	50.67	COVARIANCE	80.50
STD. ERR.	.52	.54	.37	STD. ERR. OF COVARIANCE	23.84
VARIANCE	1111.91	1291.06	571.60	STD. DEV. OF COVARIANCE	1545.64
STD. DEV.	33.35	35.09	23.91	CORRELATION COEFFICIENT	.089
KURTOSIS	2.83	3.10	3.39	VECTOR MEAN	28.21
SKEWNESS	.05	-.03	.79	VECTOR VARIANCE	1171.49
				STD. DEV.	34.23

UNITS OF RAW DATA VARIABLES = MM/SEC

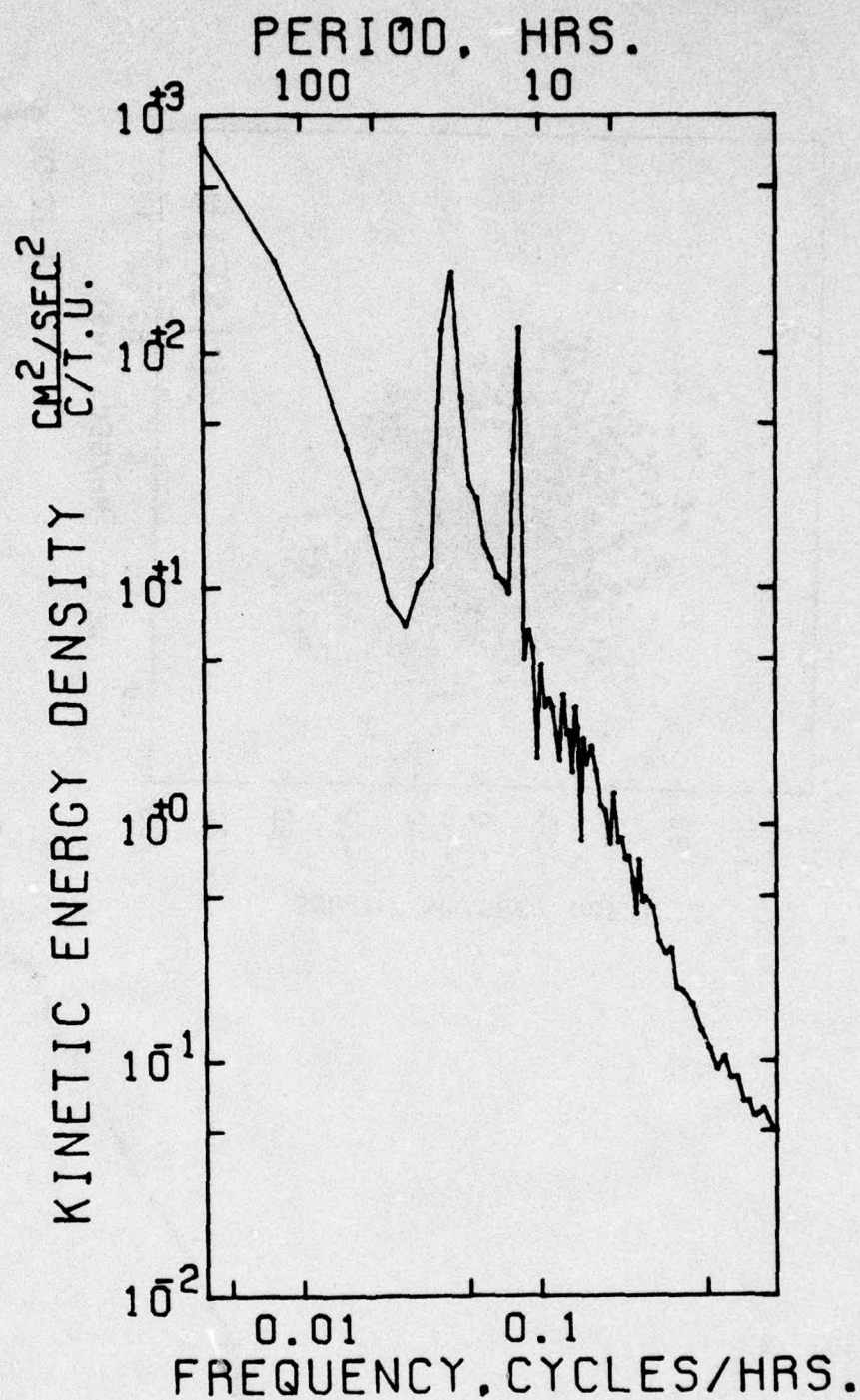
SAMPLE SIZE = 4170 POINTS

SPANNING RANGE

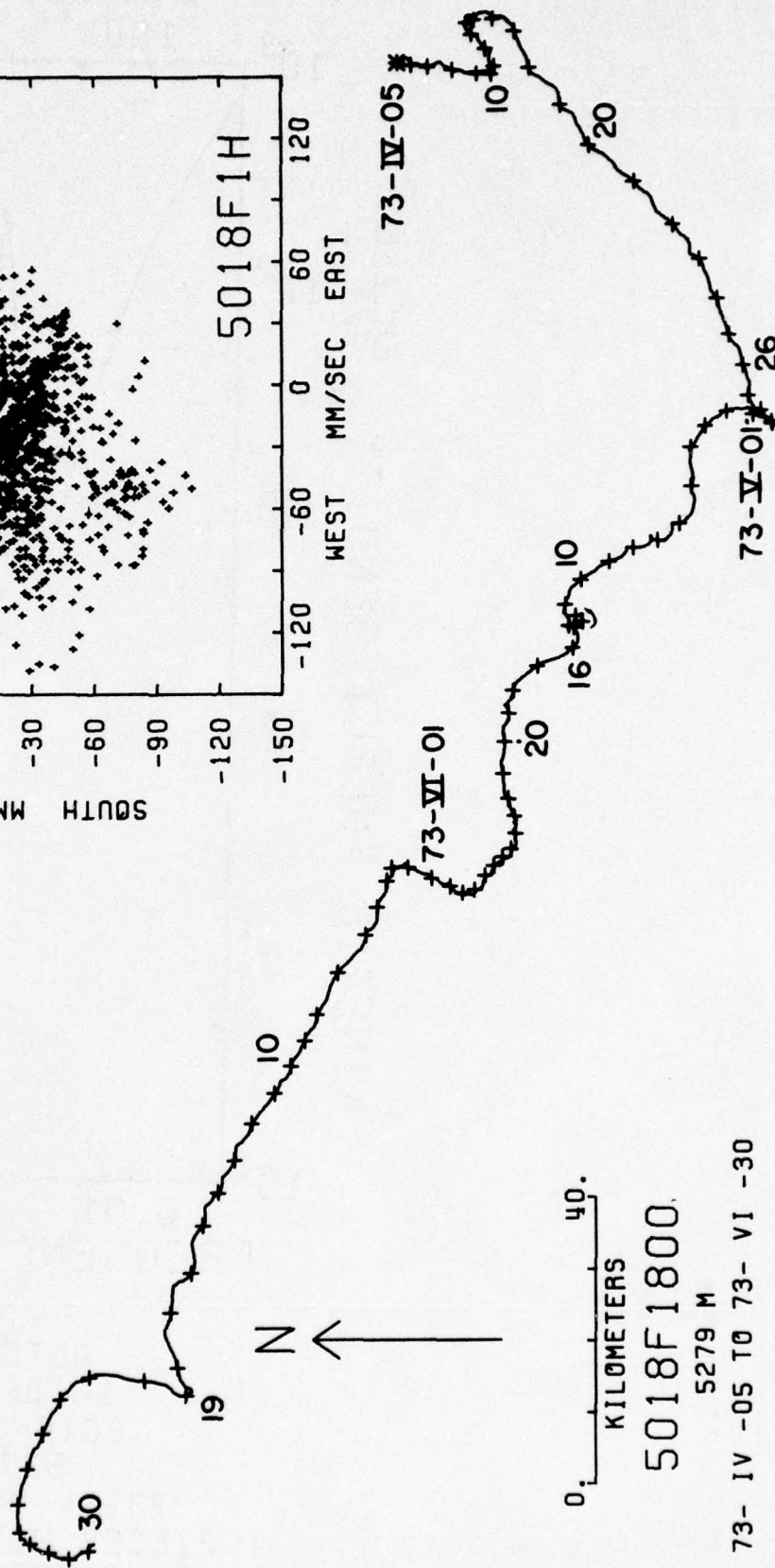
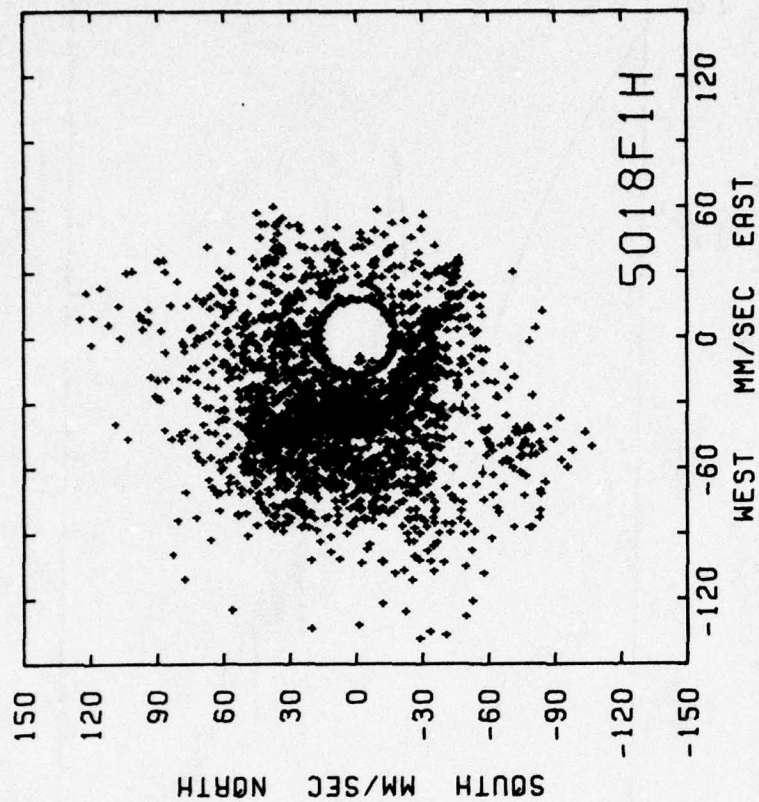
FROM 73- IV -04 15.10.37

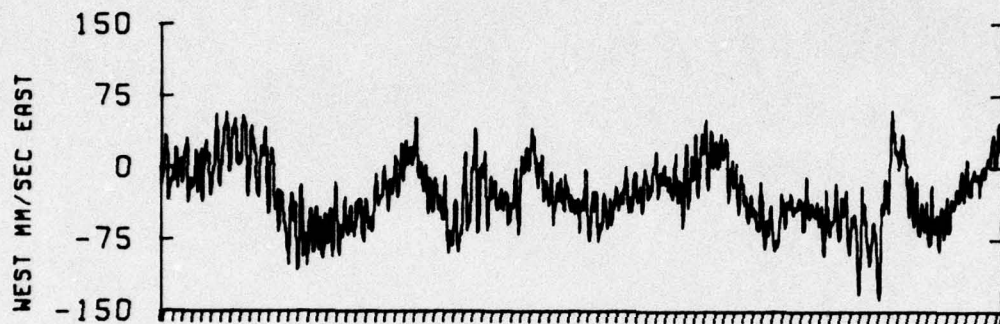
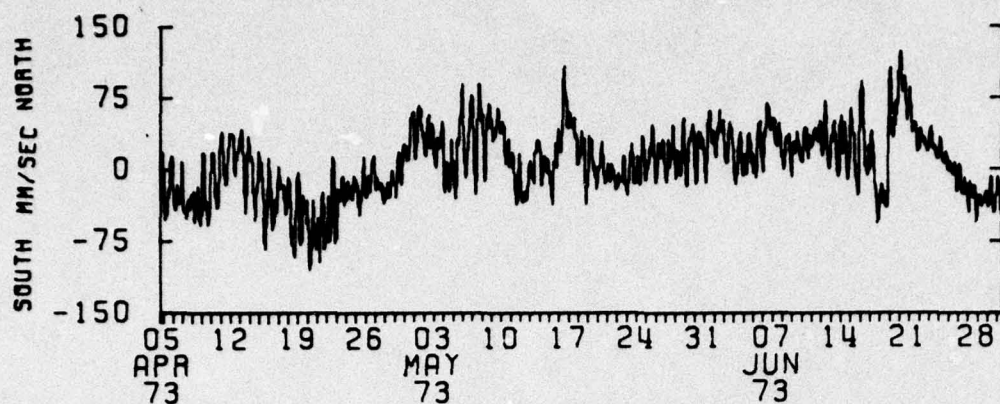
TO 73- VI -30 11.40.37

DURATION 86 DAYS 20 H 30 M 0 S

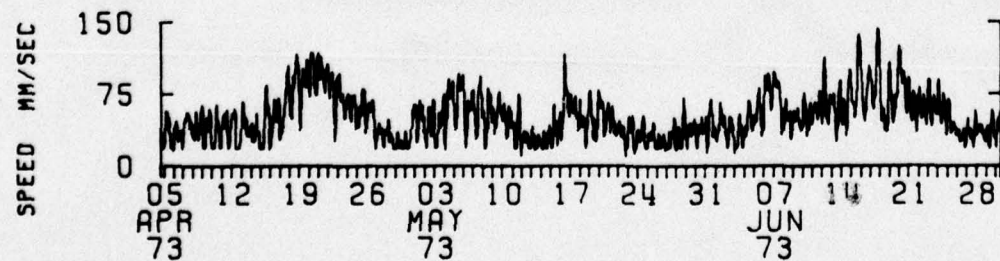
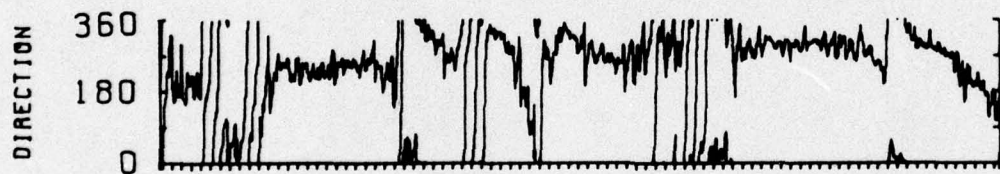


AUTO SPECTRUM
5018F1800 EAST
5018F1800 NORTH
5279 METERS
73-IV-04 TO 73-VI-28
1 PIECES WITH 2048 ESTIMATES
PER PIECE. AVERAGED OVER
8 ADJACENT FREQUENCY BANDS





5018F1H
5279 M



Data Section 2

Page

Temperature and Pressure Plotted by Mooring

224

U, V Vector Components Plotted by Mooring (Stick Plot)

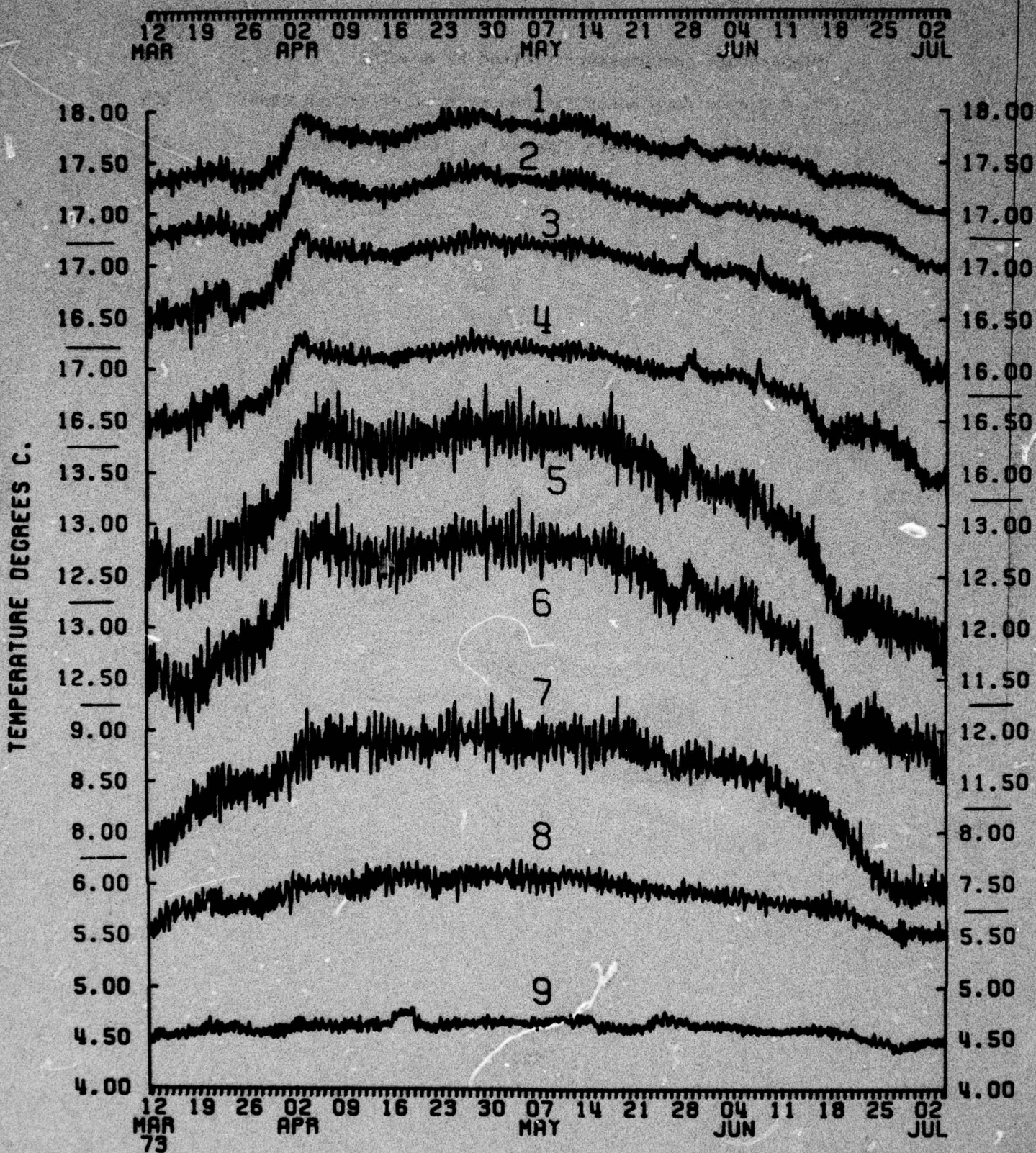
258

U, V Vector Components Plotted by Depth

274

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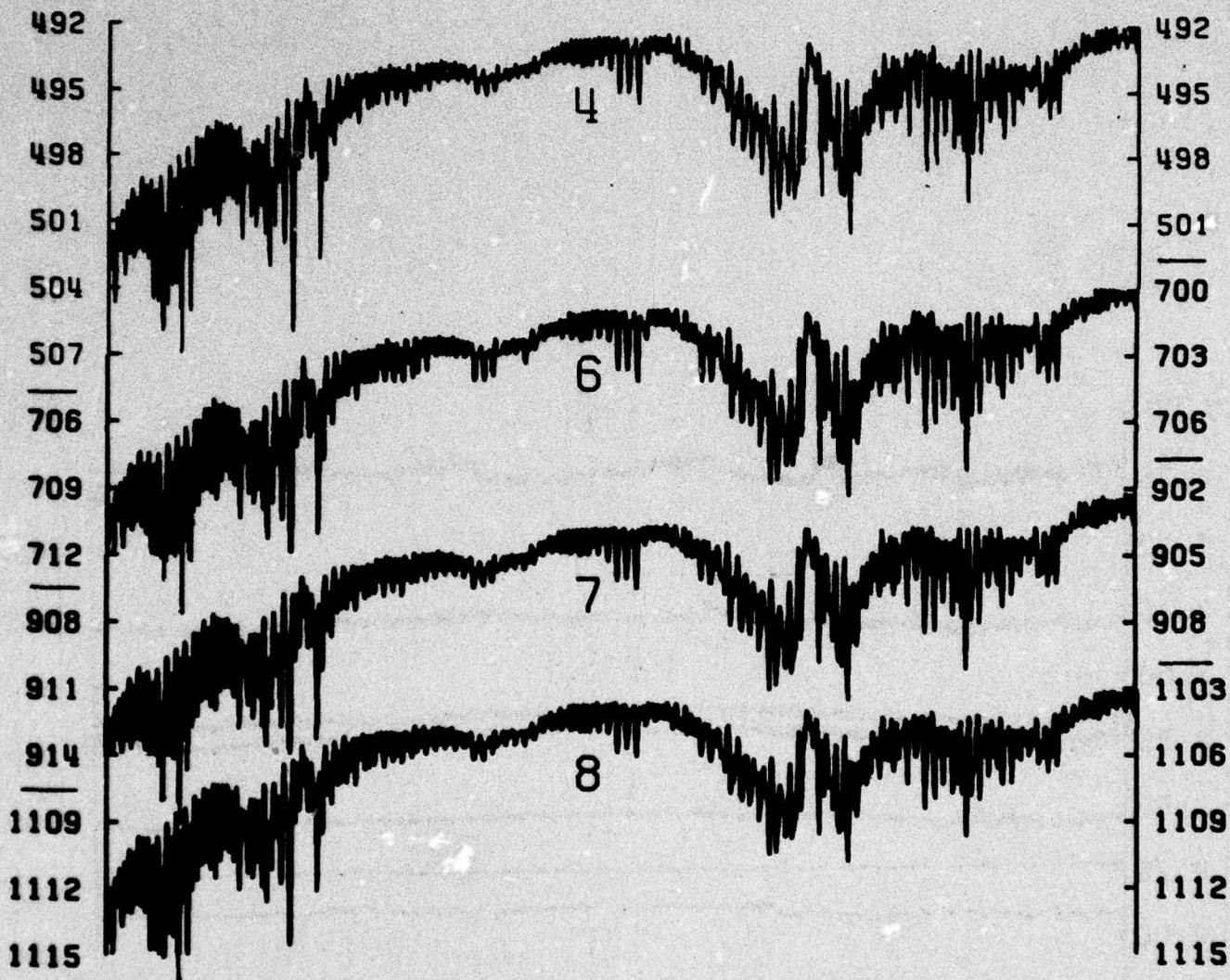
481



481

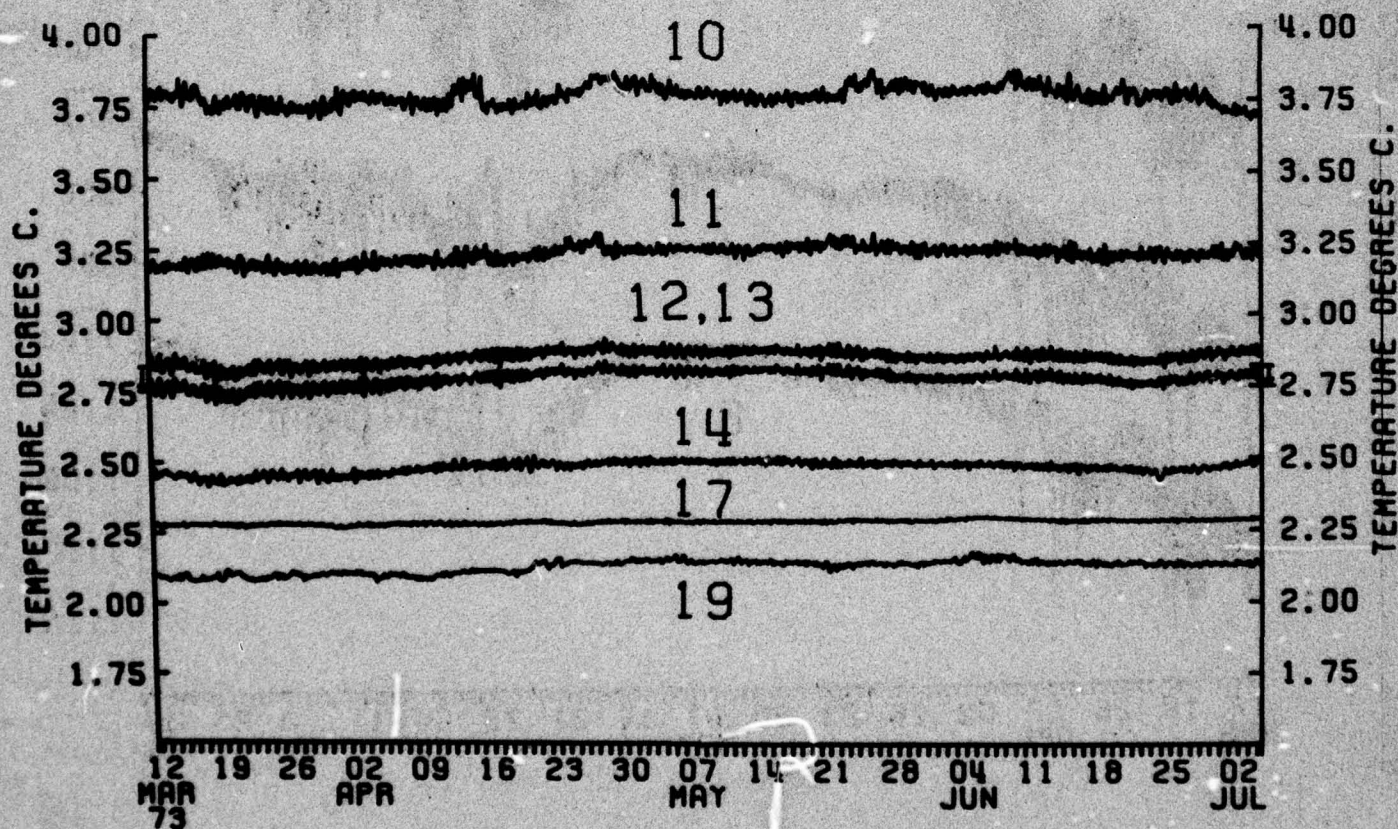
12 19 26 02 09 16 23 30 07 14 21 28 04 11 18 25 02
MAR 73 APR MAY JUN JUL

PRESSURE DBARS

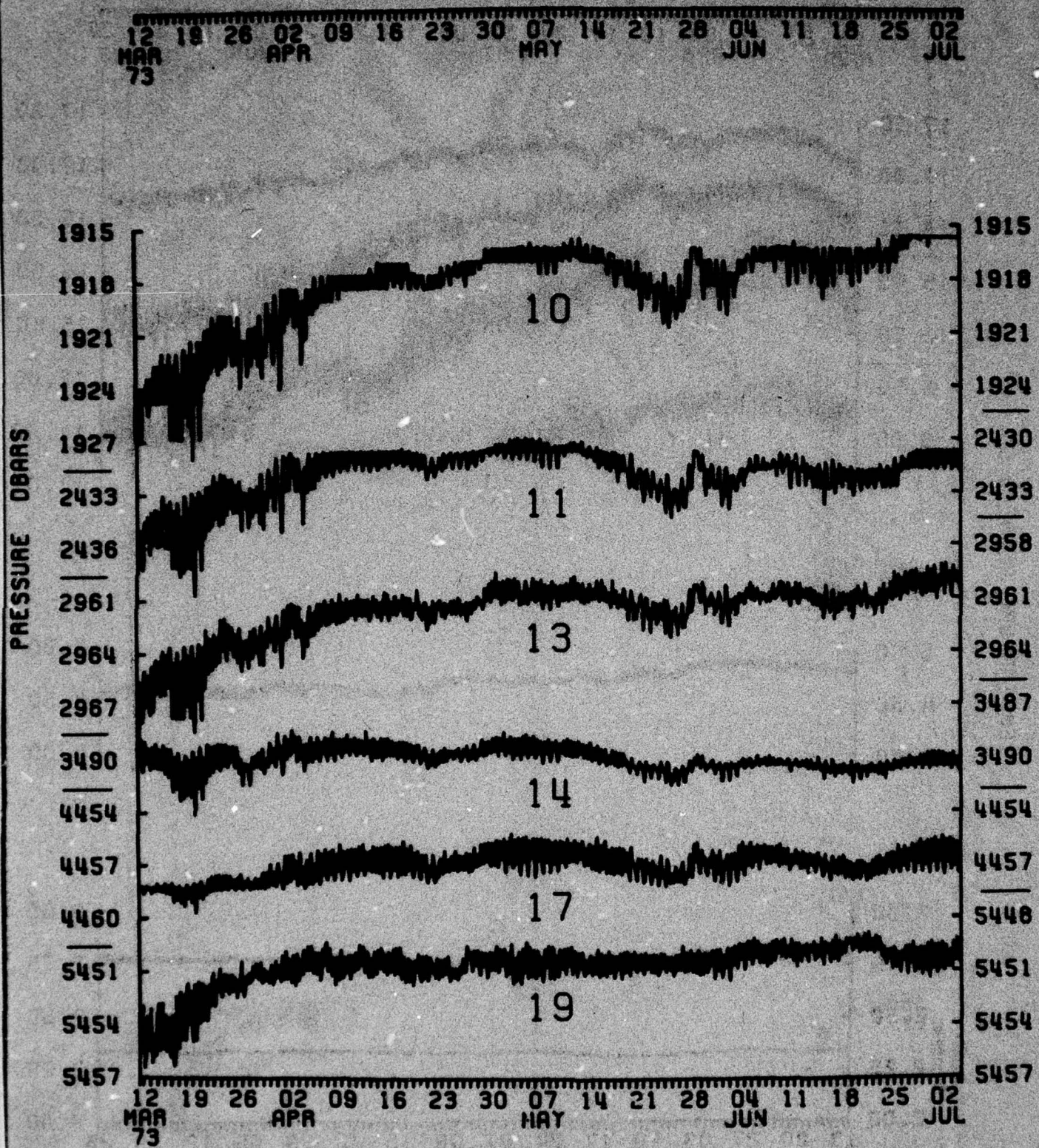


481

12 19 26 02 09 16 23 30 07 14 21 28 04 11 18 25 02
MAR APR MAY JUN JUL

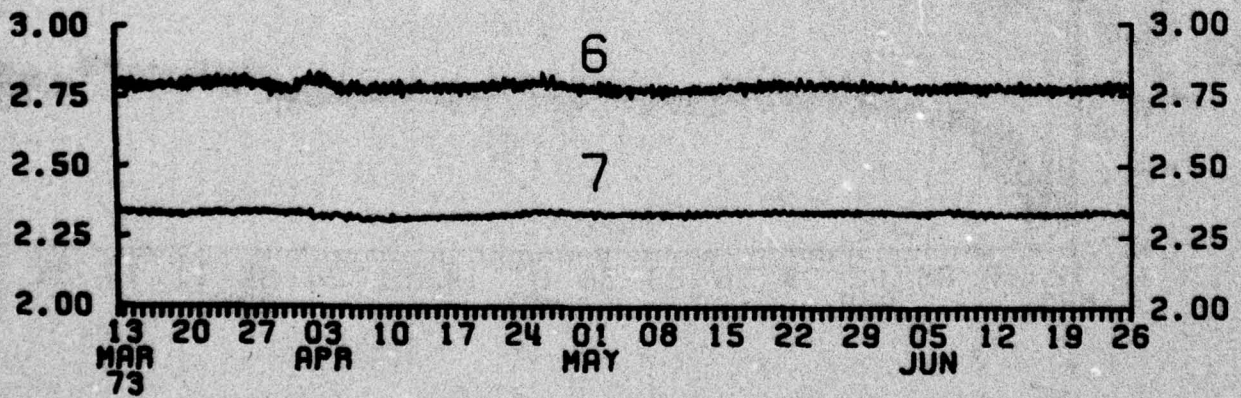
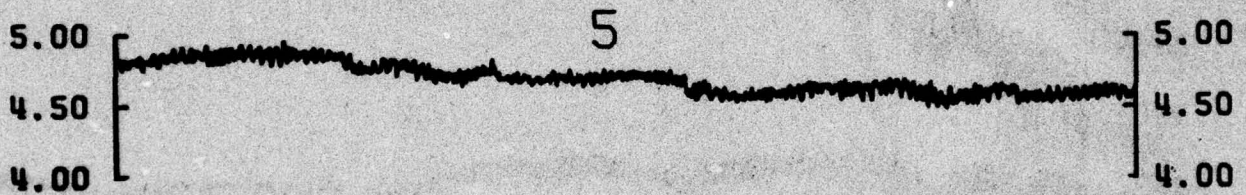
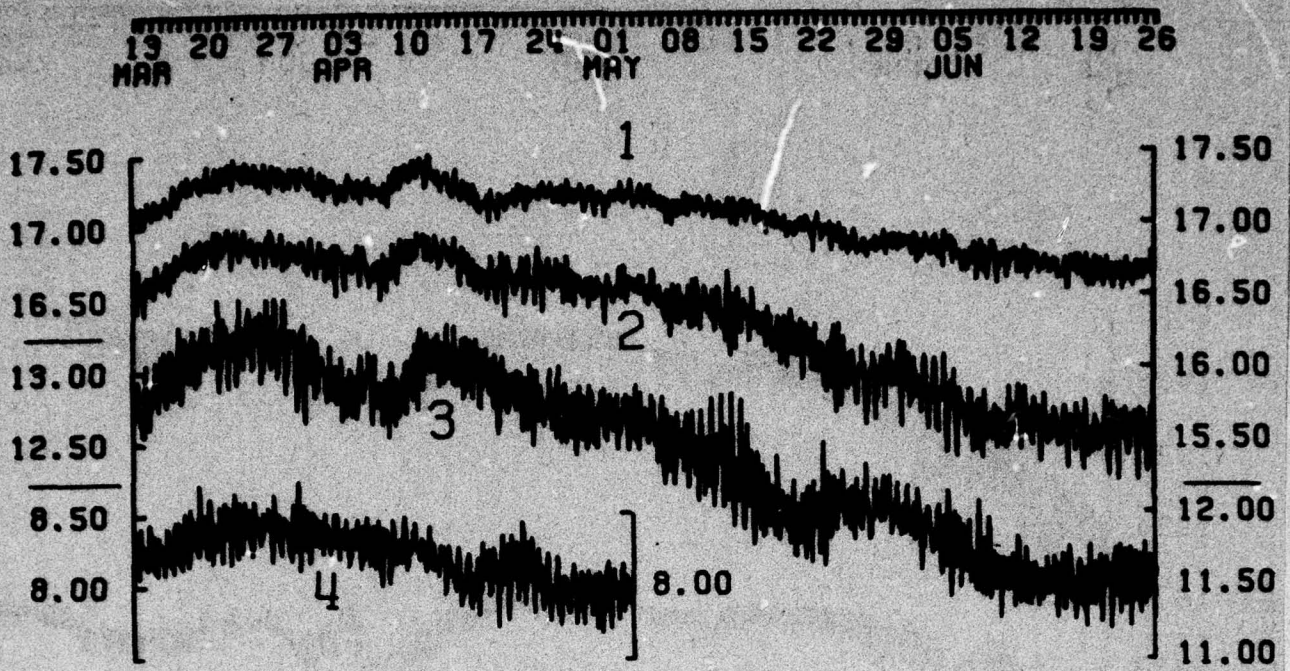


481



482

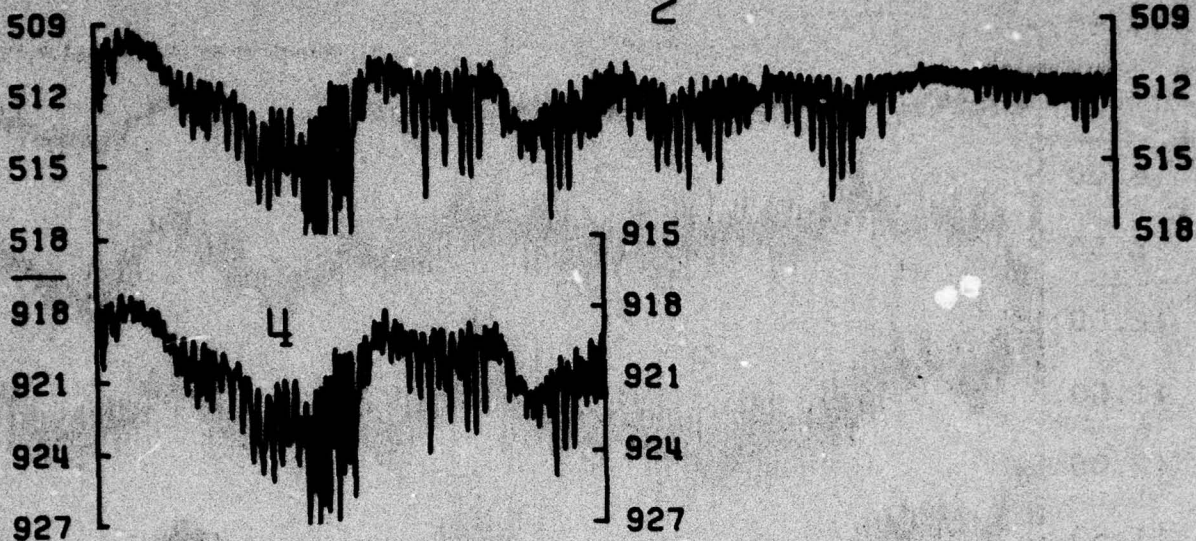
TEMPERATURE DEGREES C.



482

14 21 28 04 11 18 25 02 09 16 23 30 06 13 20
APR MAY JUN

2

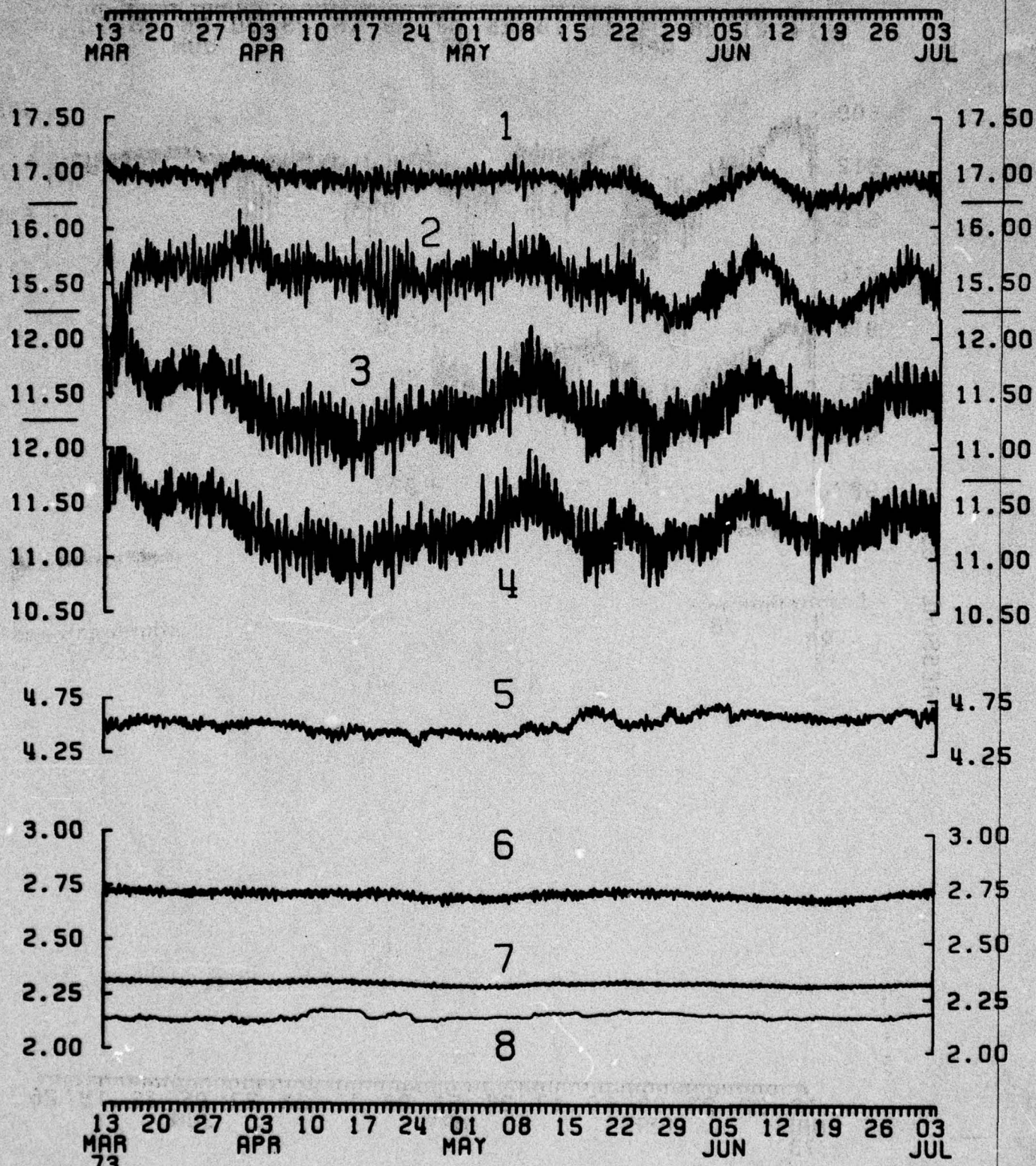


PRESSURE DBARS

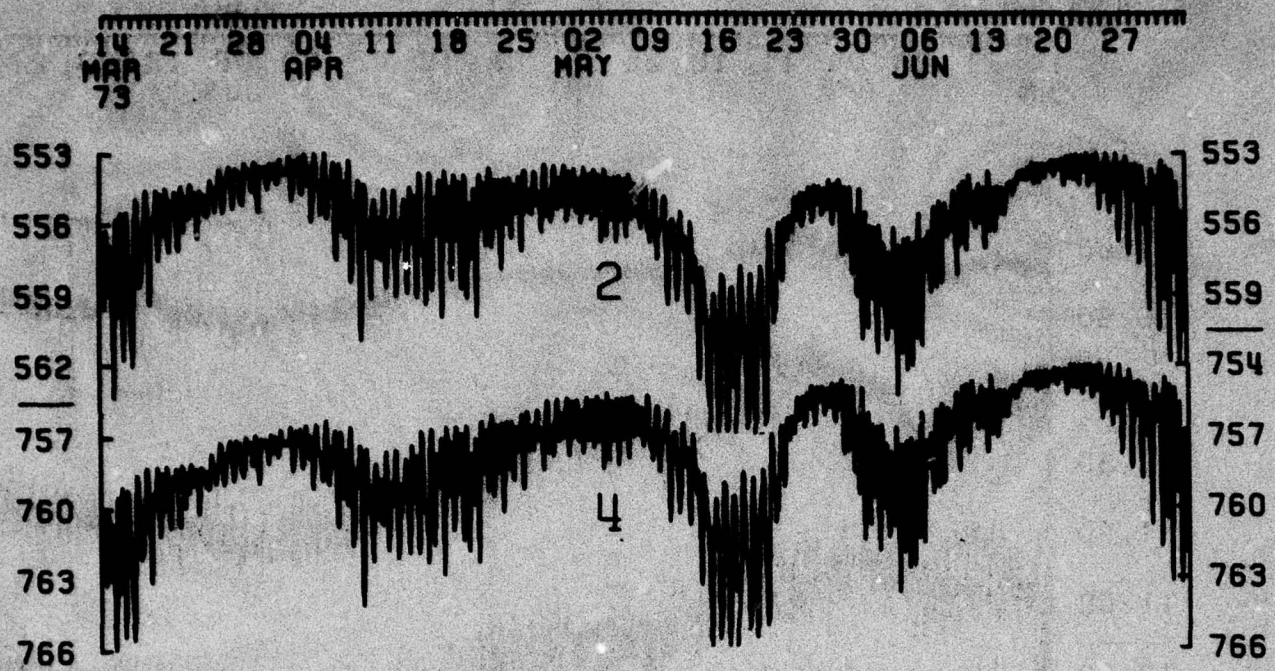
13 20 27 03 10 17 24 01 08 15 22 29 05 12 19 26
MAR 73 APR MAY JUN

483

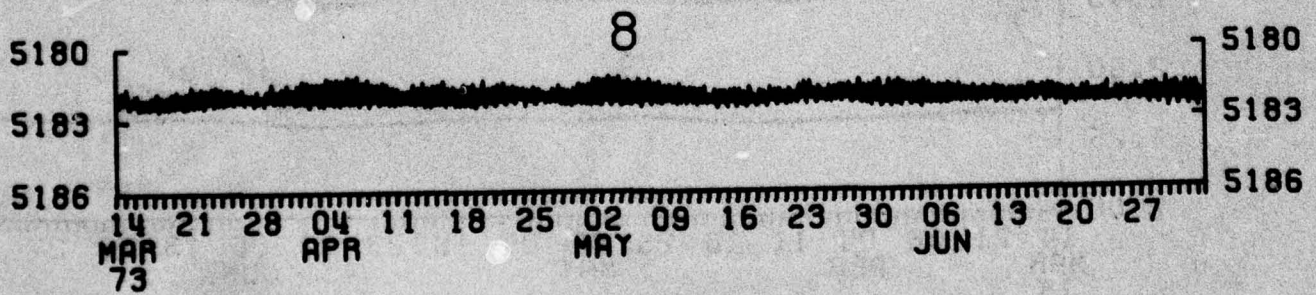
TEMPERATURE DEGREES C.



483

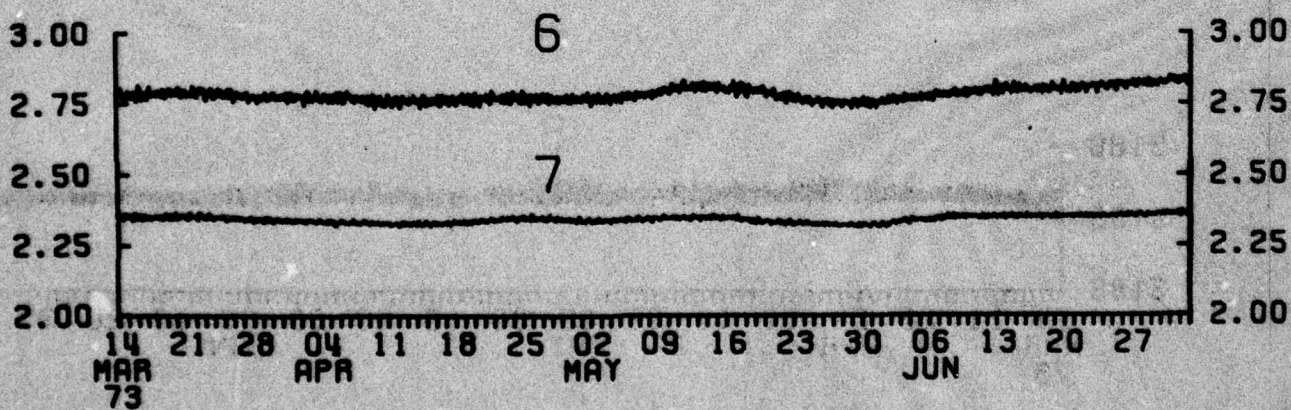
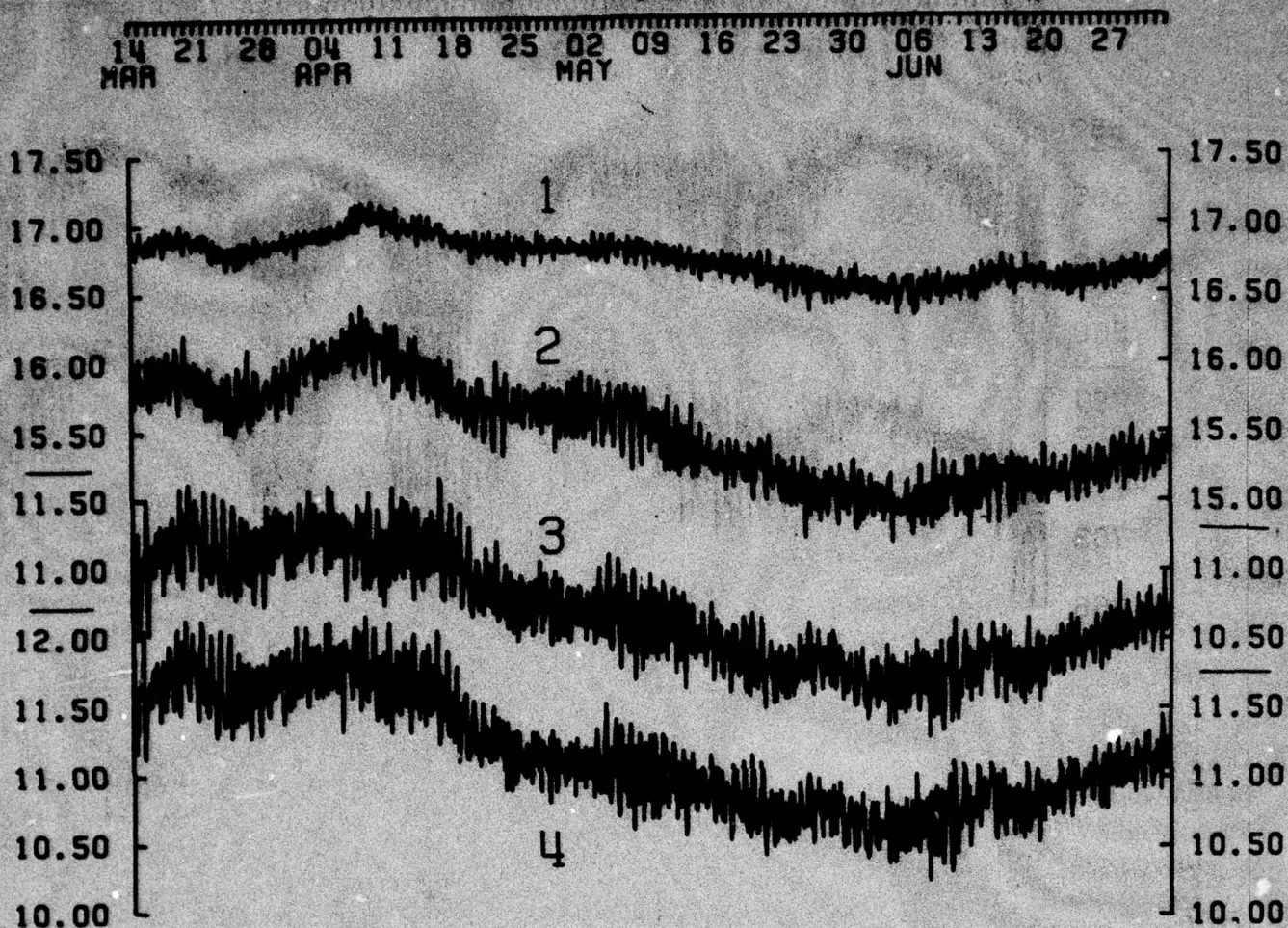


PRESSURE DBARS



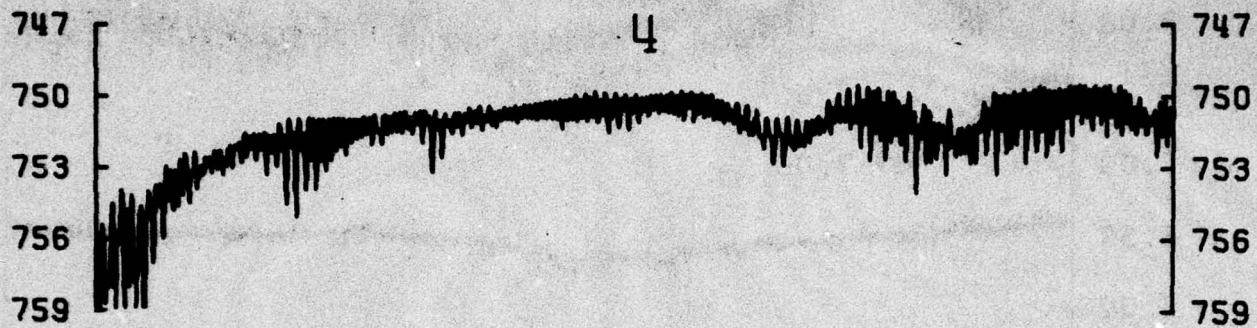
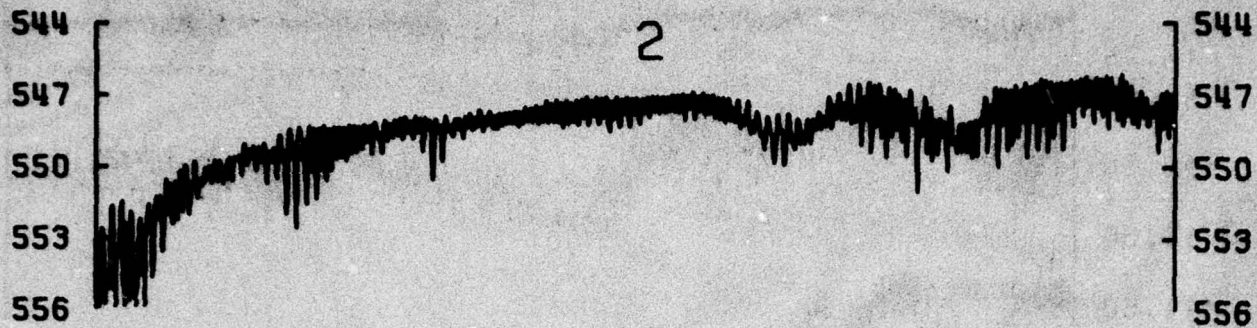
484

TEMPERATURE DEGREES C.



484

14 21 28 04 11 18 25 02 09 16 23 30 06 13 20 27
APR MAY JUN



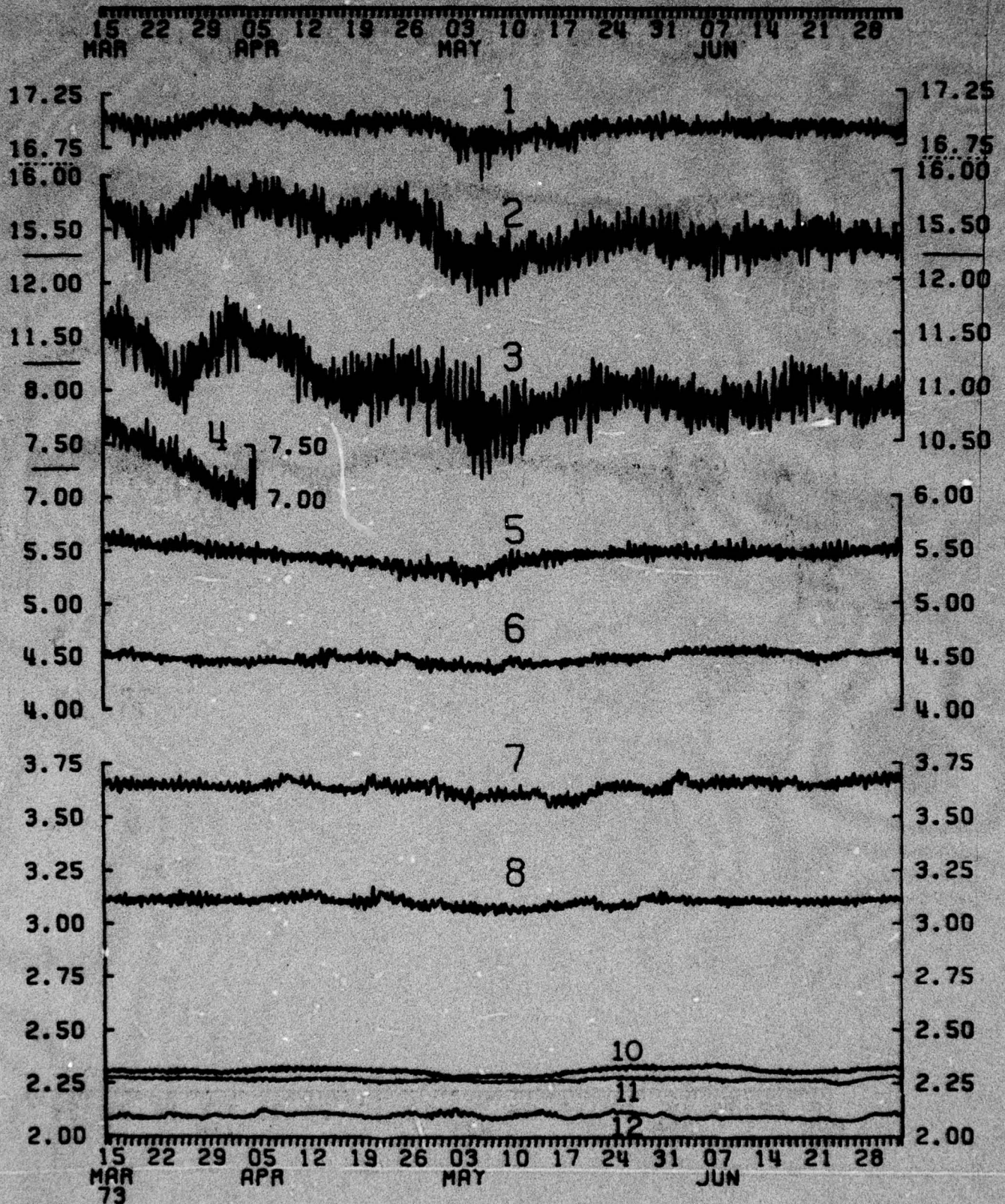
DBARS

PRESSURE

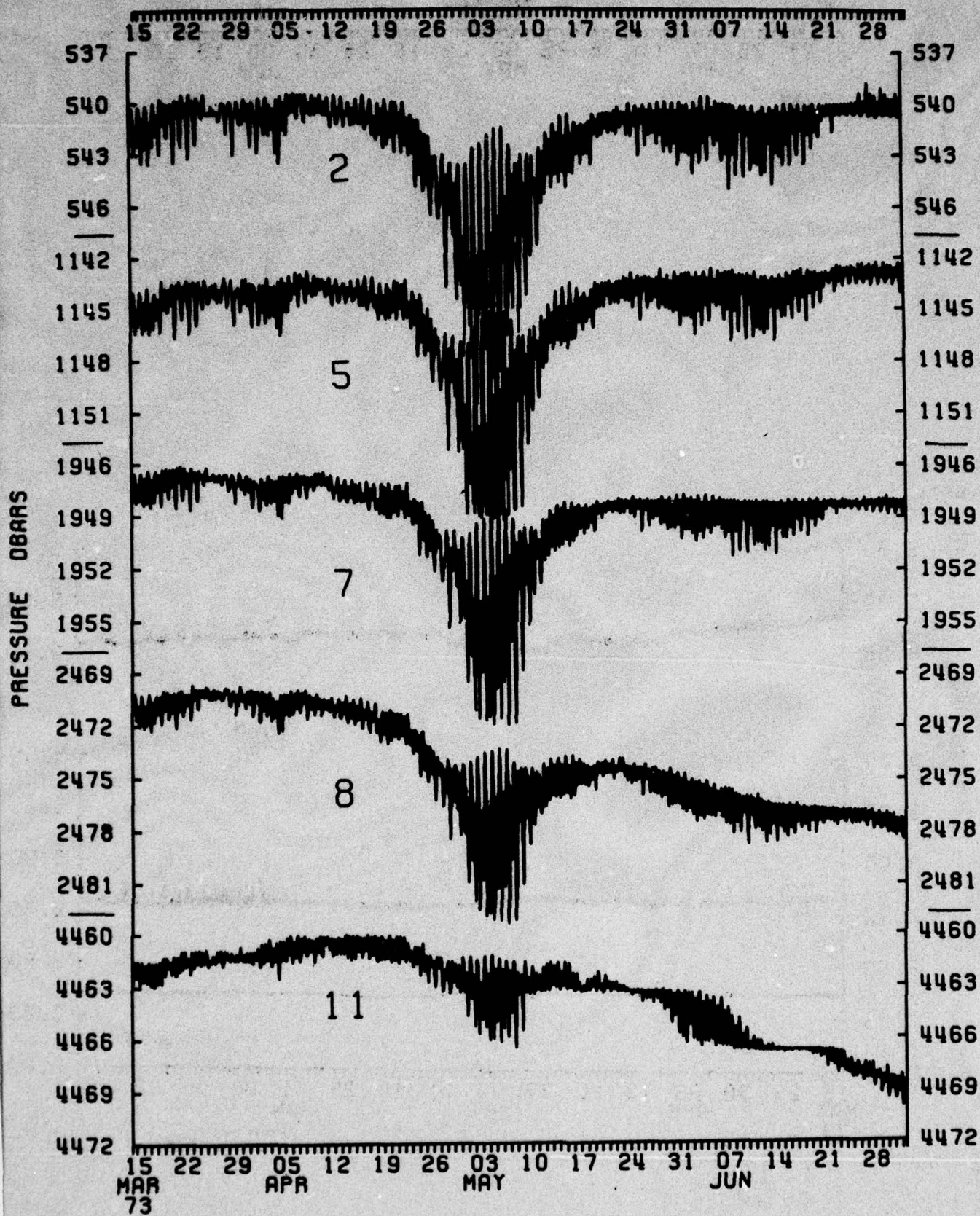
15 22 29 05 12 19 26 03 10 17 24 31 07 14 21 28
MAR 73 APR MAY JUN

485

TEMPERATURE DEGREES C.



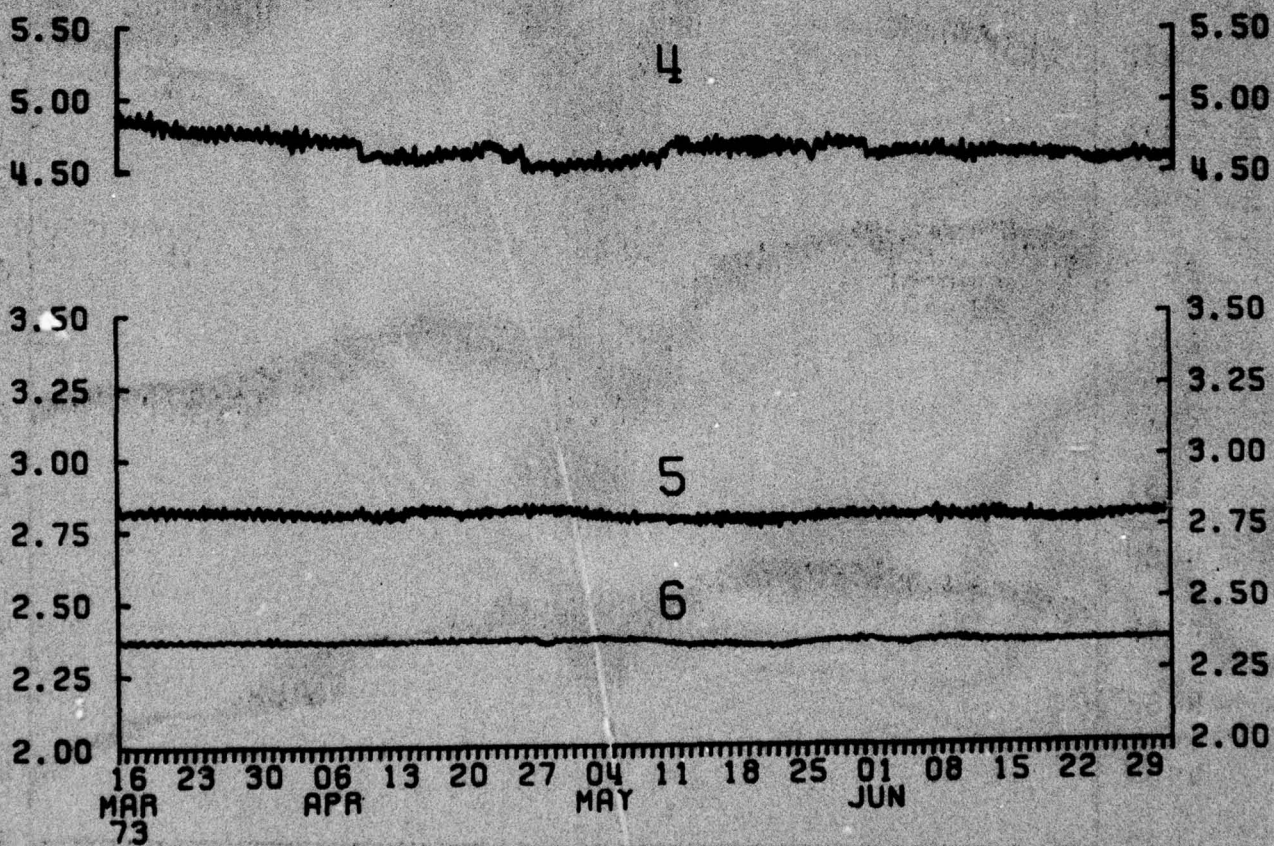
485



486

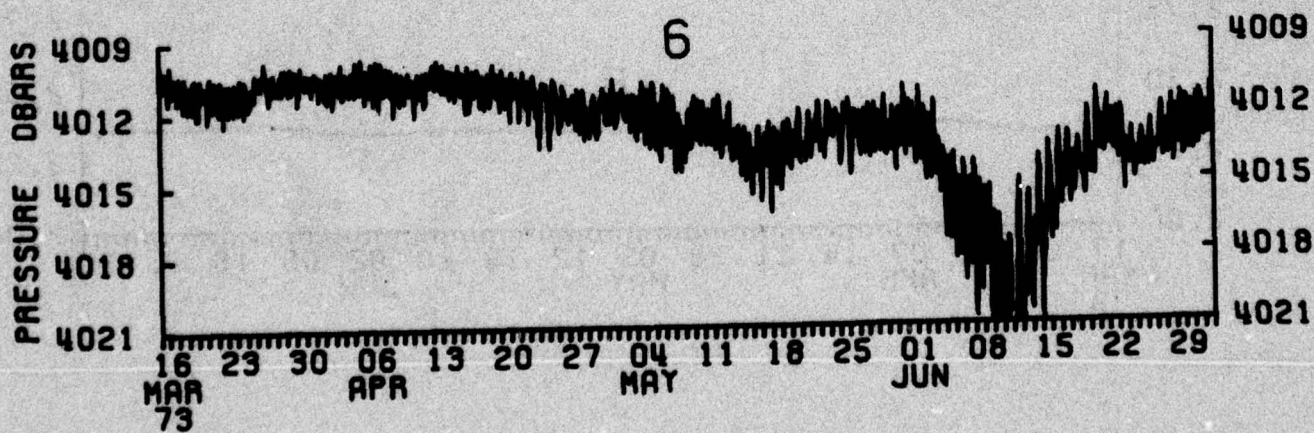
21 28 04 11 18 25 02 09 16 23 30 06 13 20 27
 APR MAY JUN

TEMPERATURE DEGREES C.

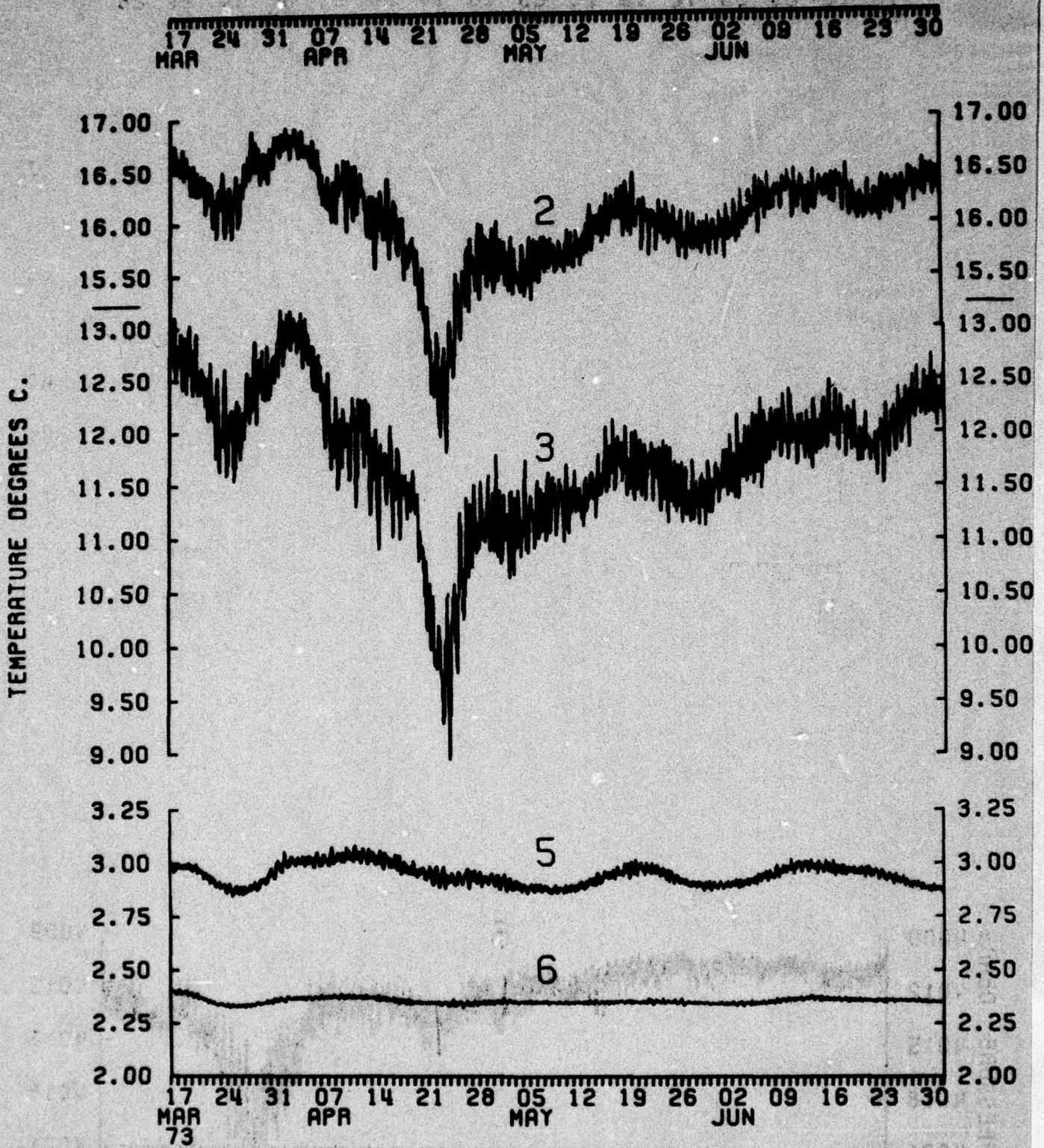


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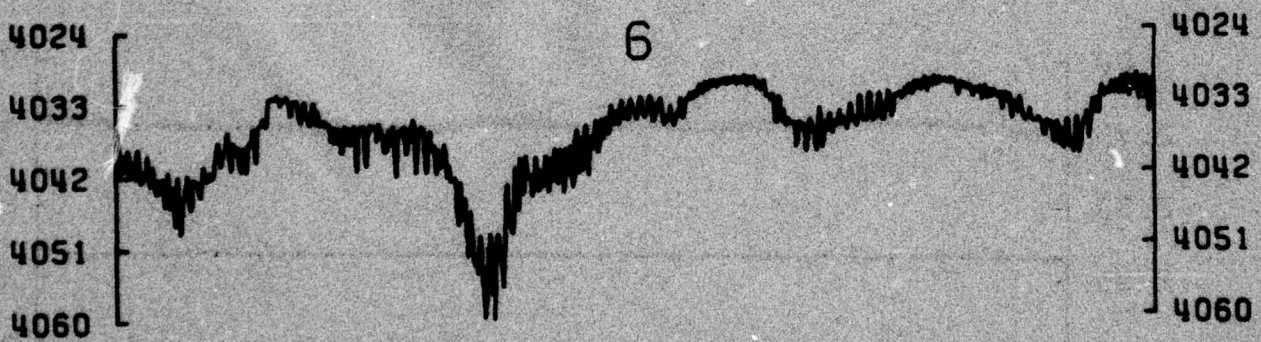
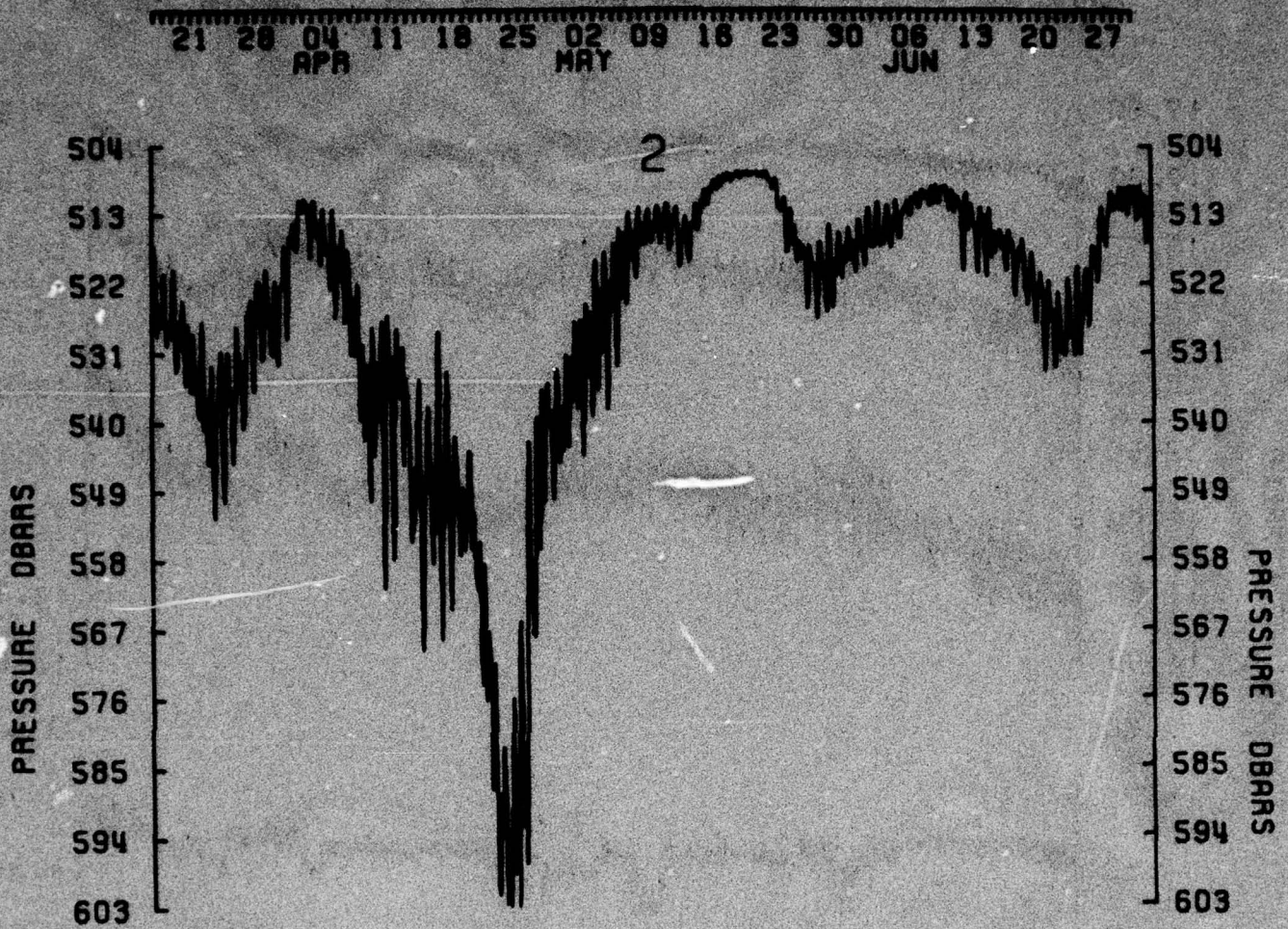
15 22 29 05 12 19 26 03 10 17 24 31 07 14 21 28
MAR APR MAY JUN



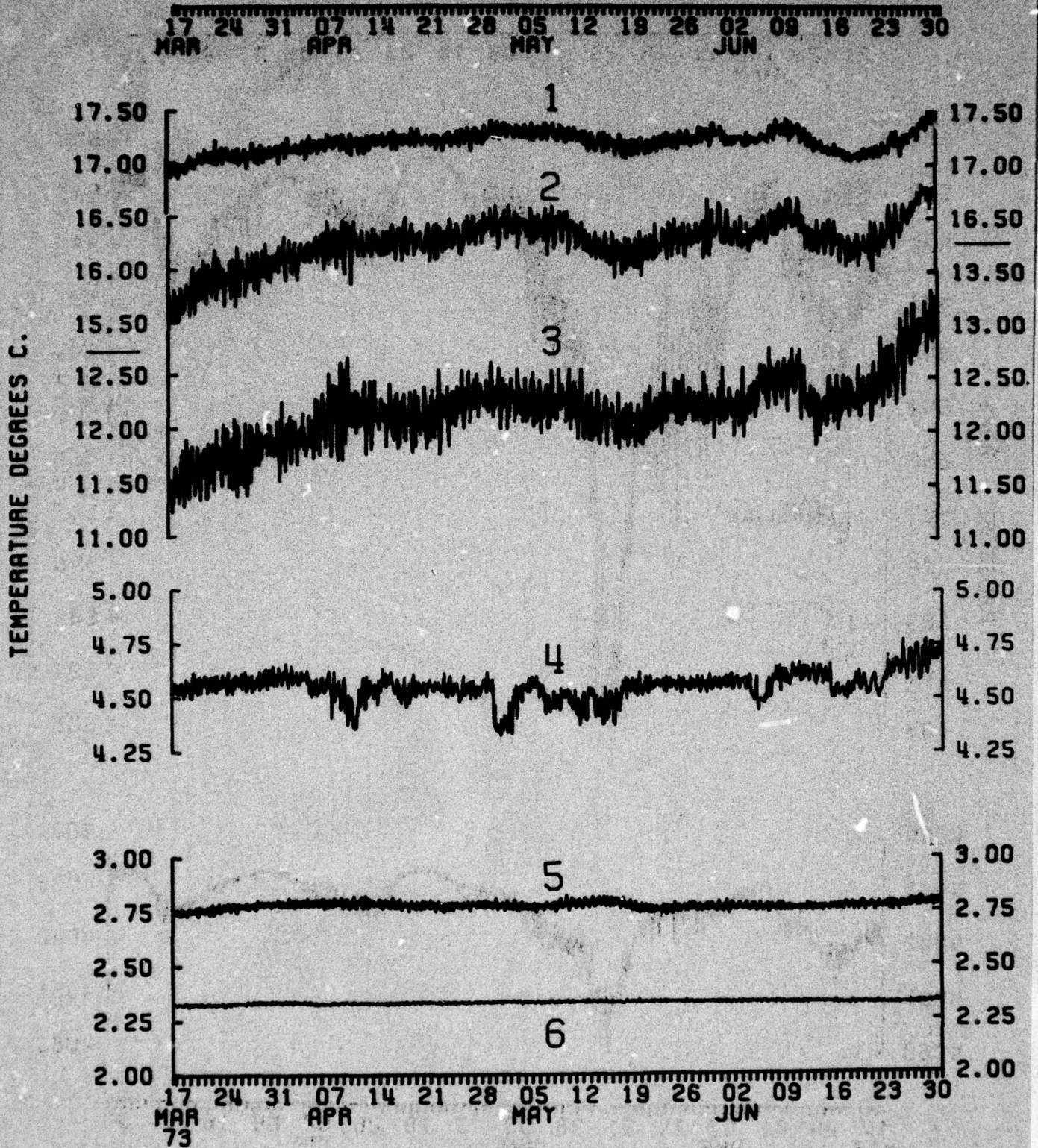
488



488

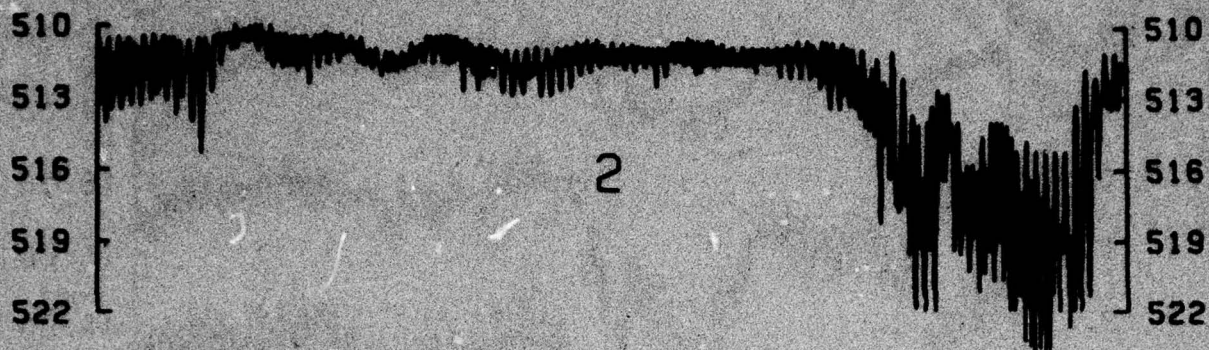


489

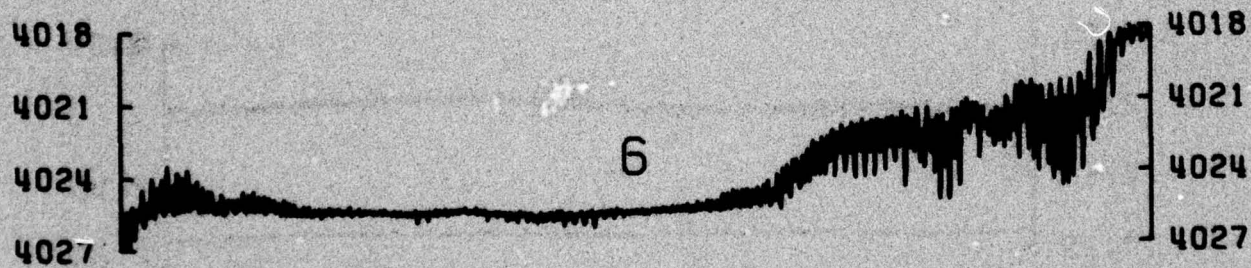


489

17 24 31 07 14 21 28 05 12 19 26 02 09 16 23 30
MAR 73 APR MAY JUN

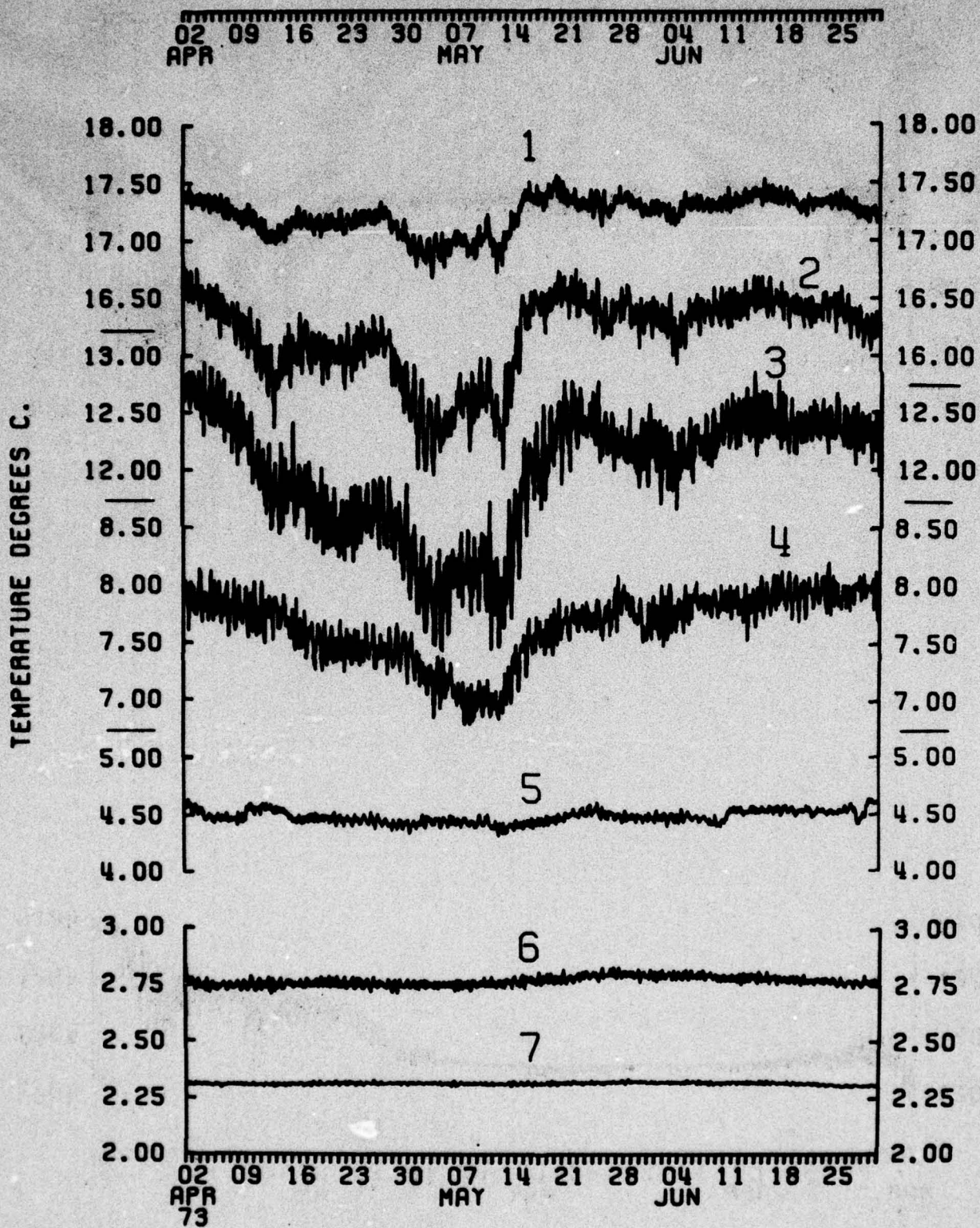


PRESSURE DBARS

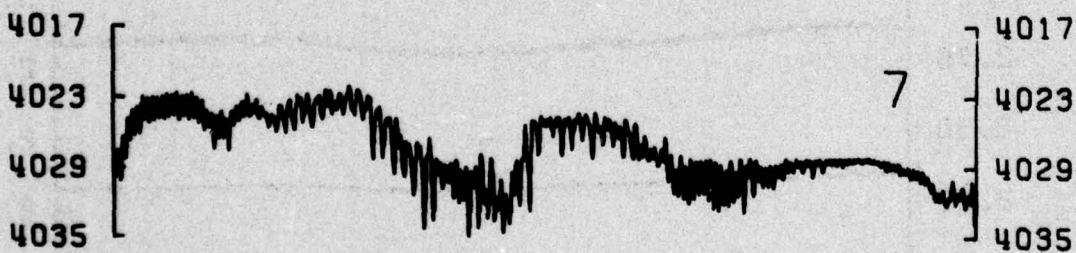
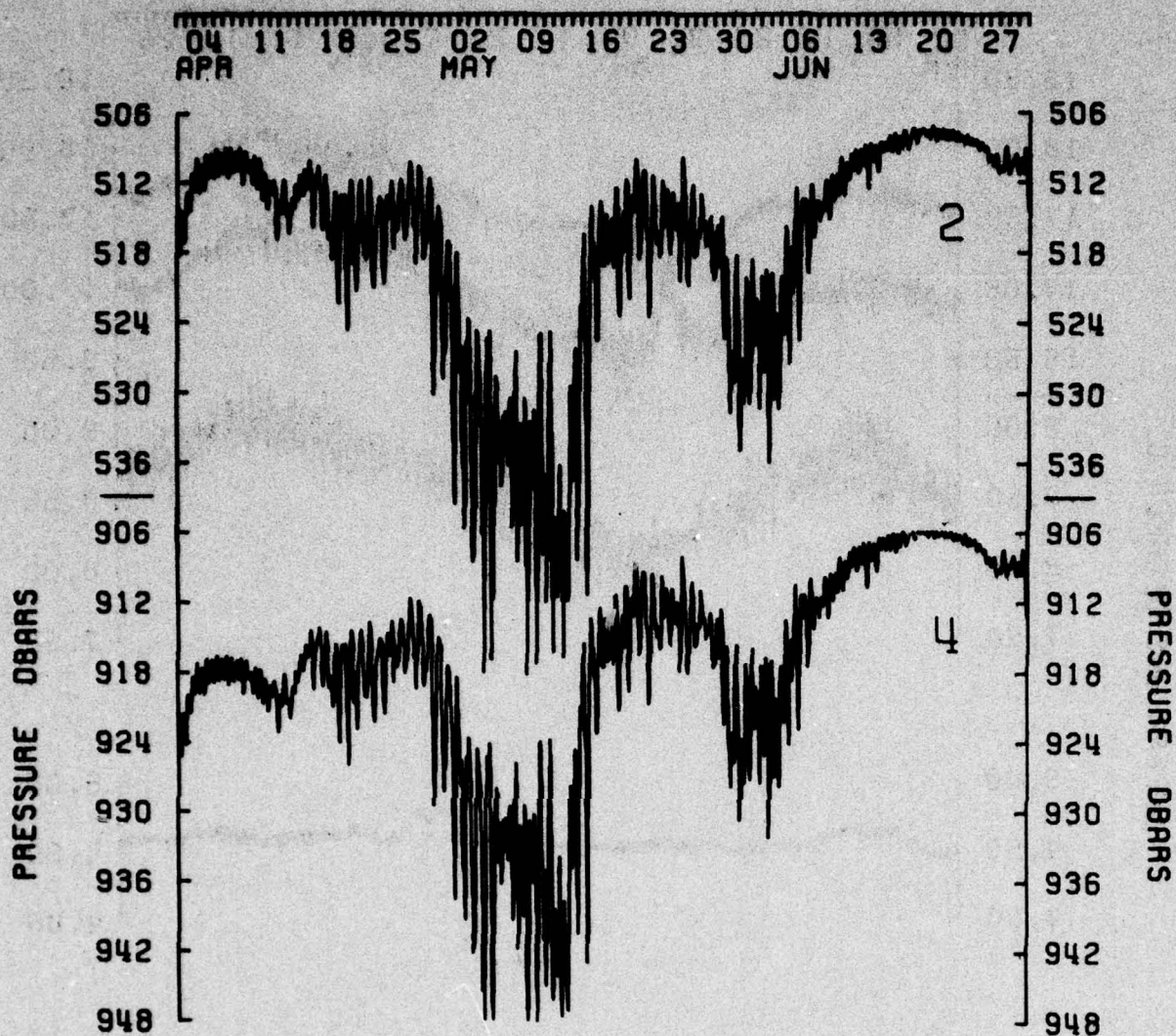


17 24 31 07 14 21 28 05 12 19 26 02 09 16 23 30
MAR 73 APR MAY JUN

493



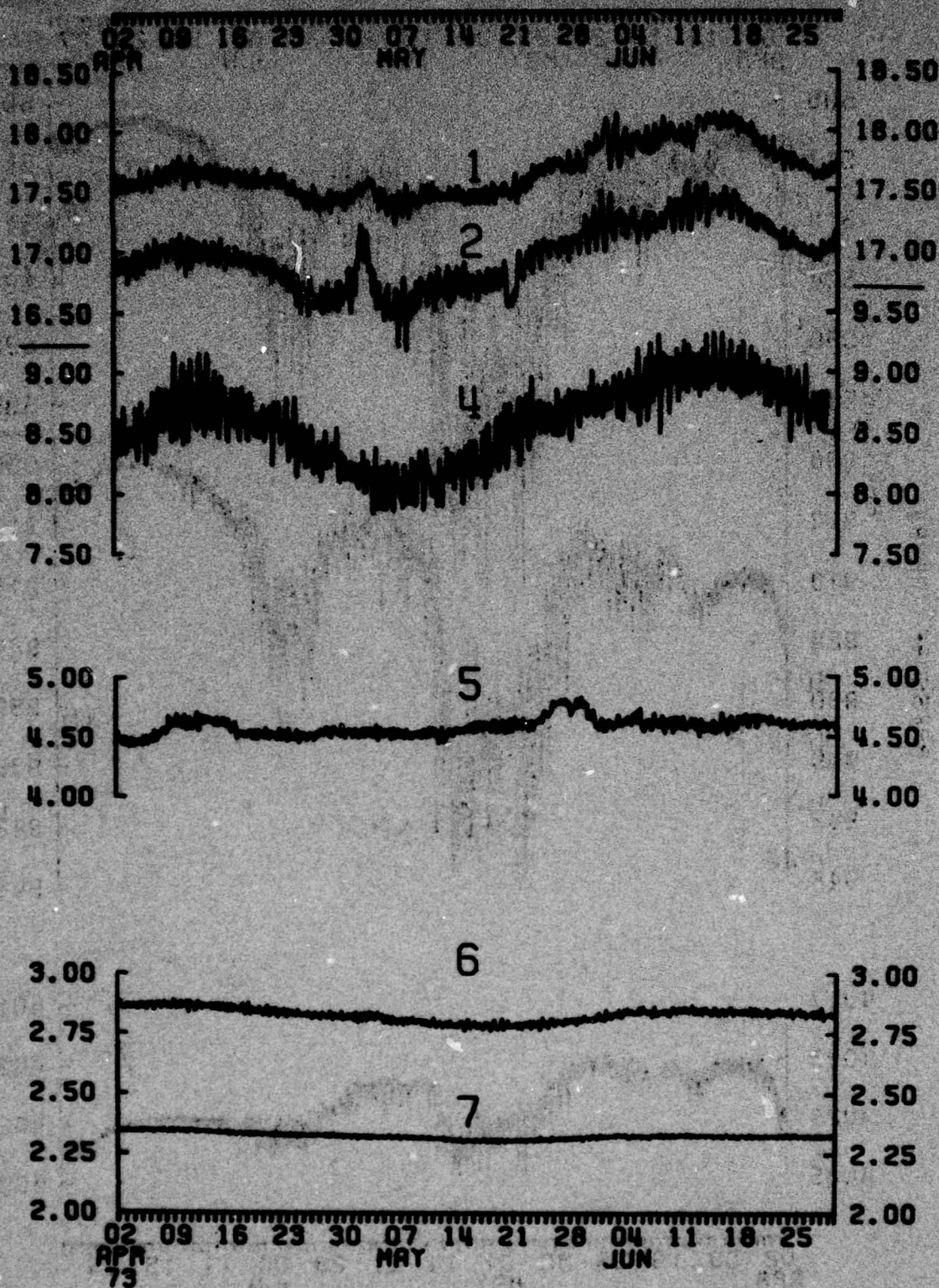
493



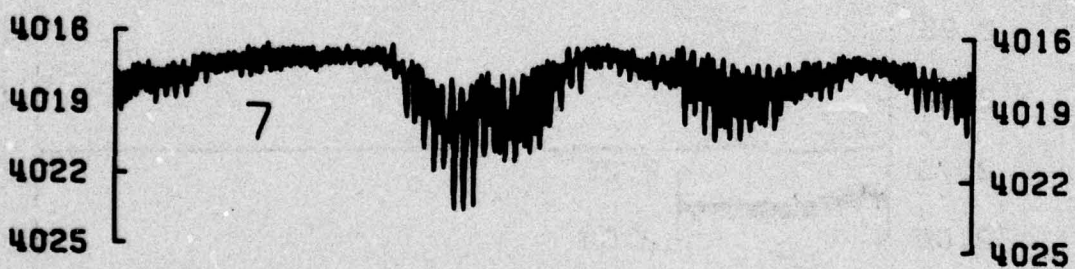
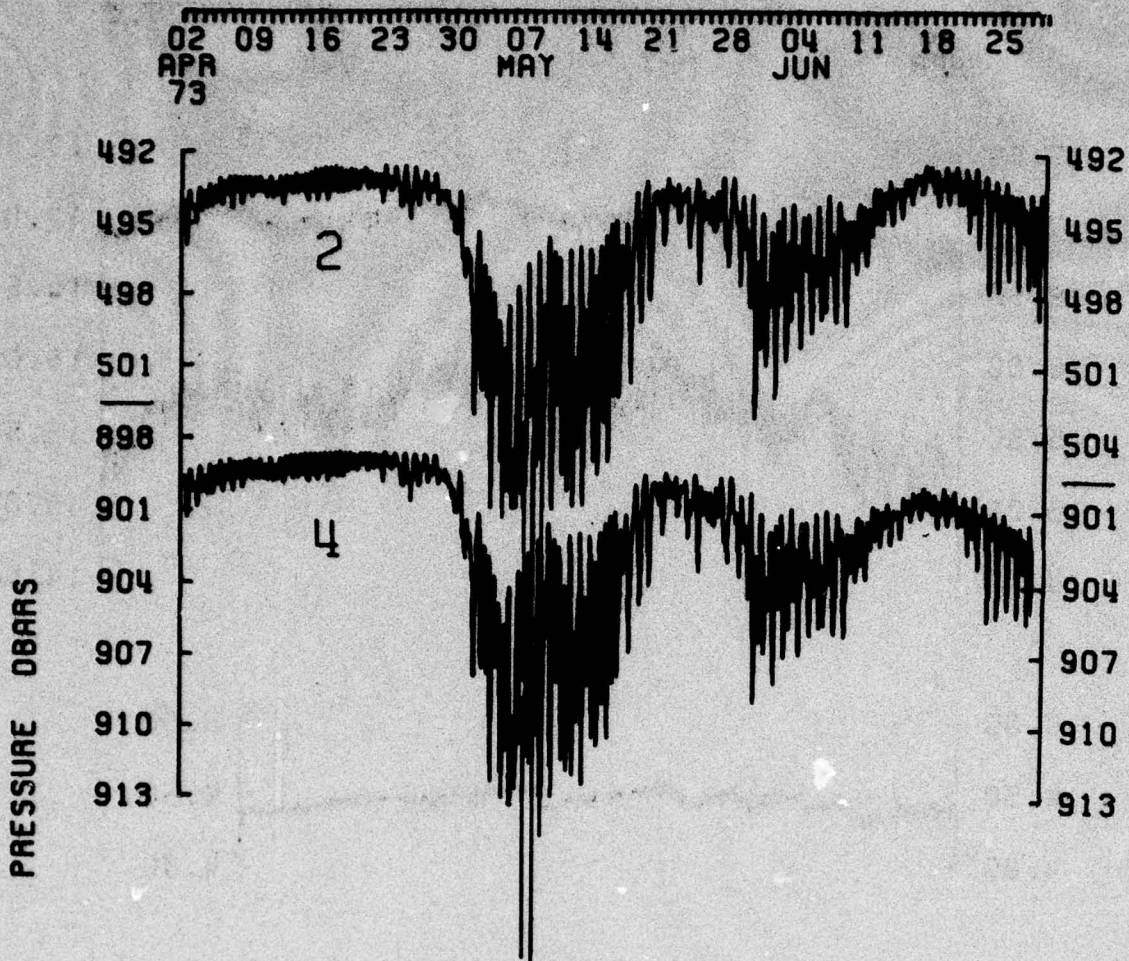
02 APR 73 09 16 23 30 07 MAY 14 21 28 04 JUN 11 18 25

494

TEMPERATURE DEGREES C.

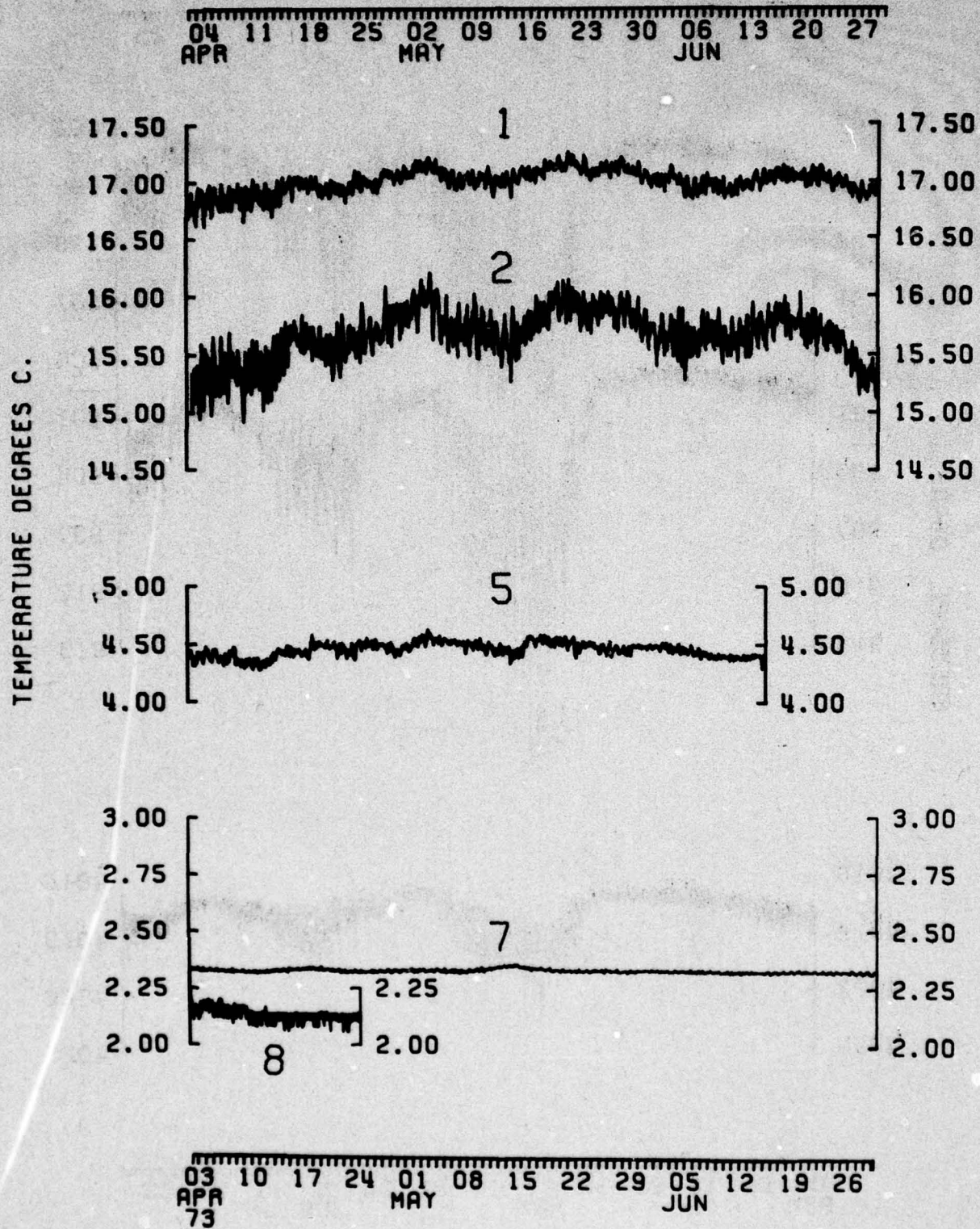


494



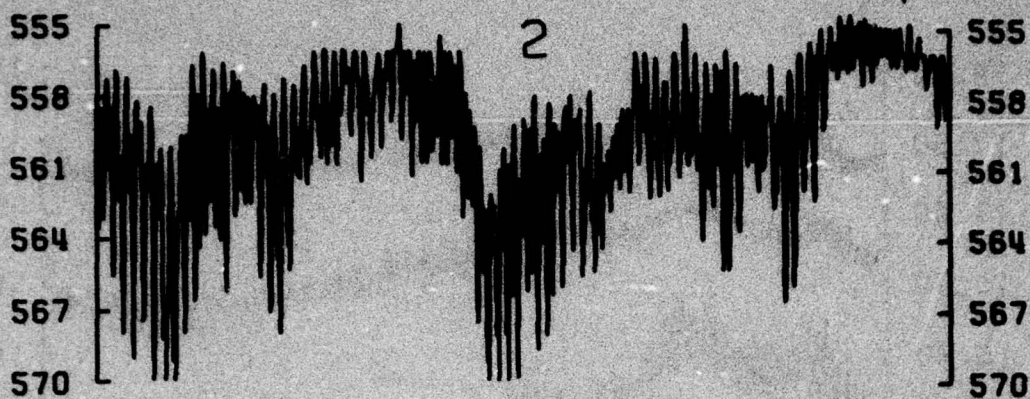
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APR MAY JUN

495

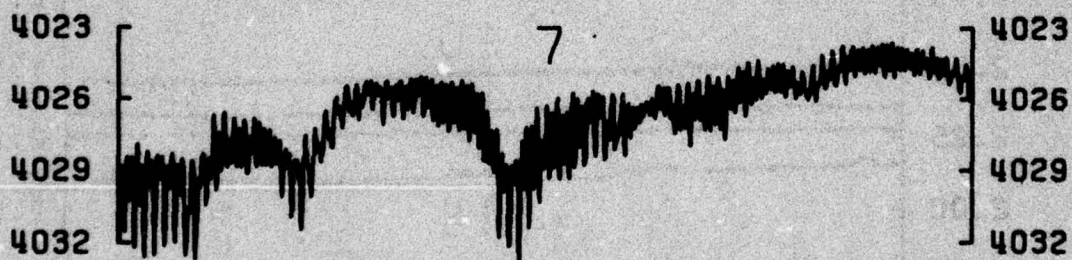


495

03 10 17 24 01 08 15 22 29 05 12 19 26
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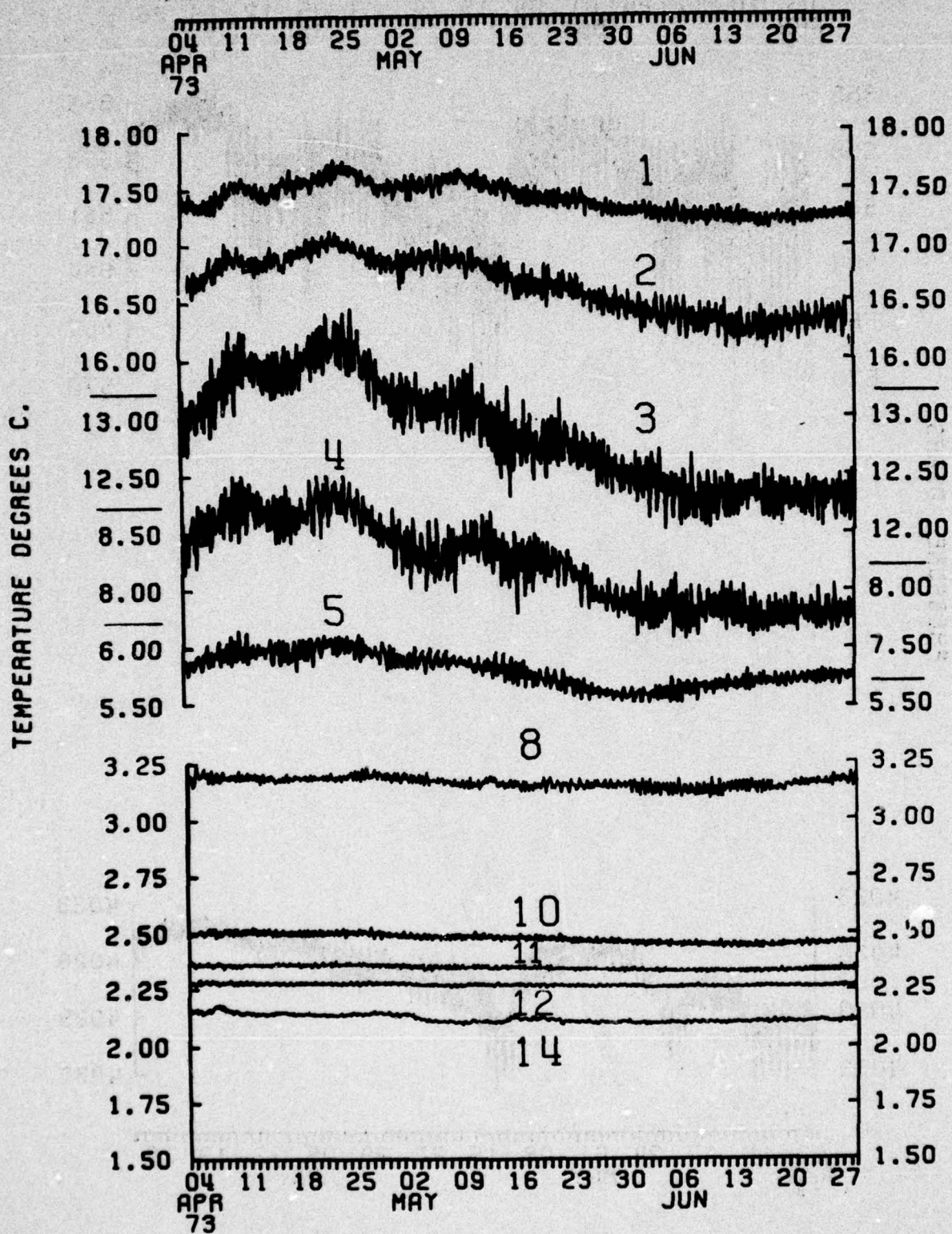


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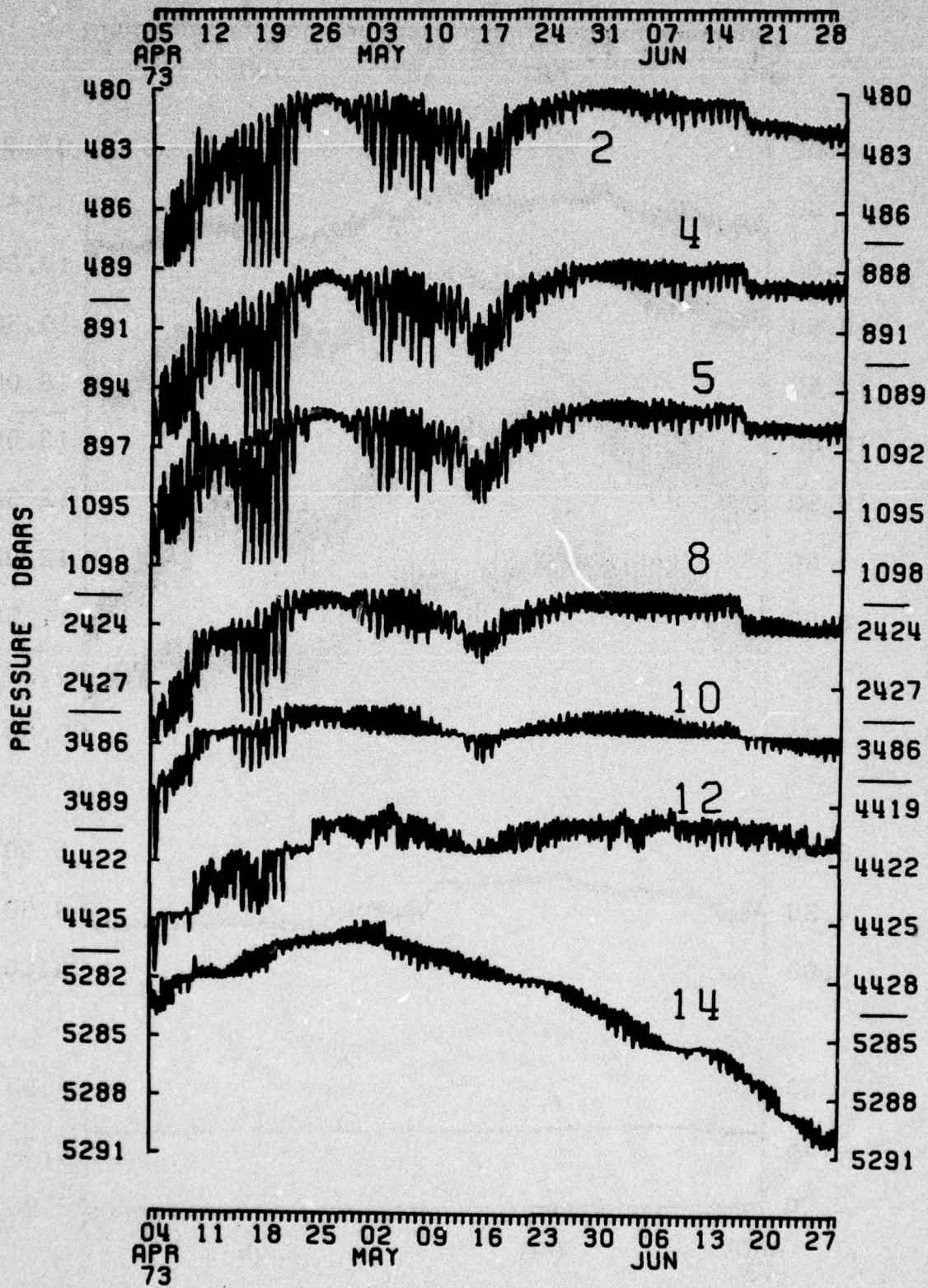


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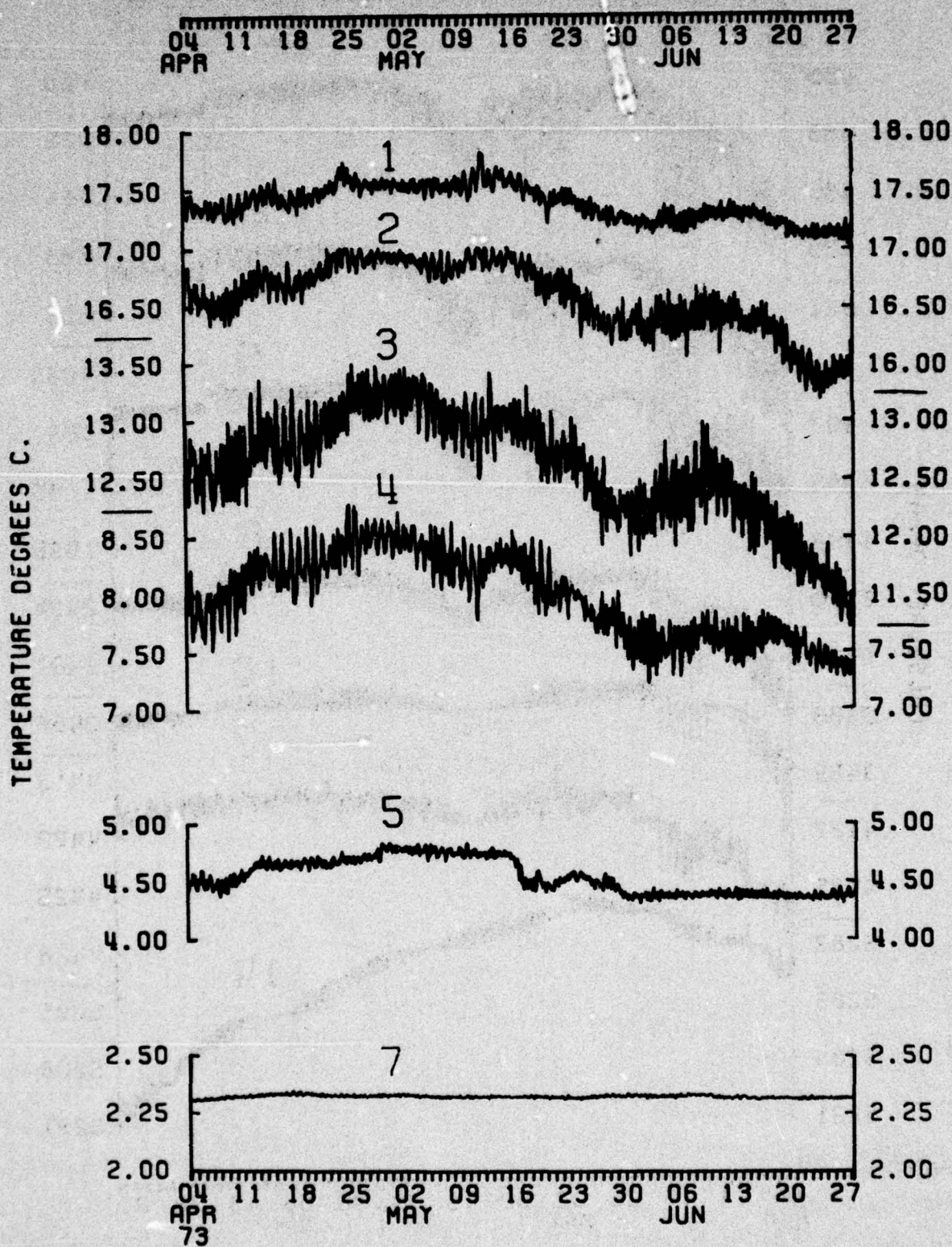
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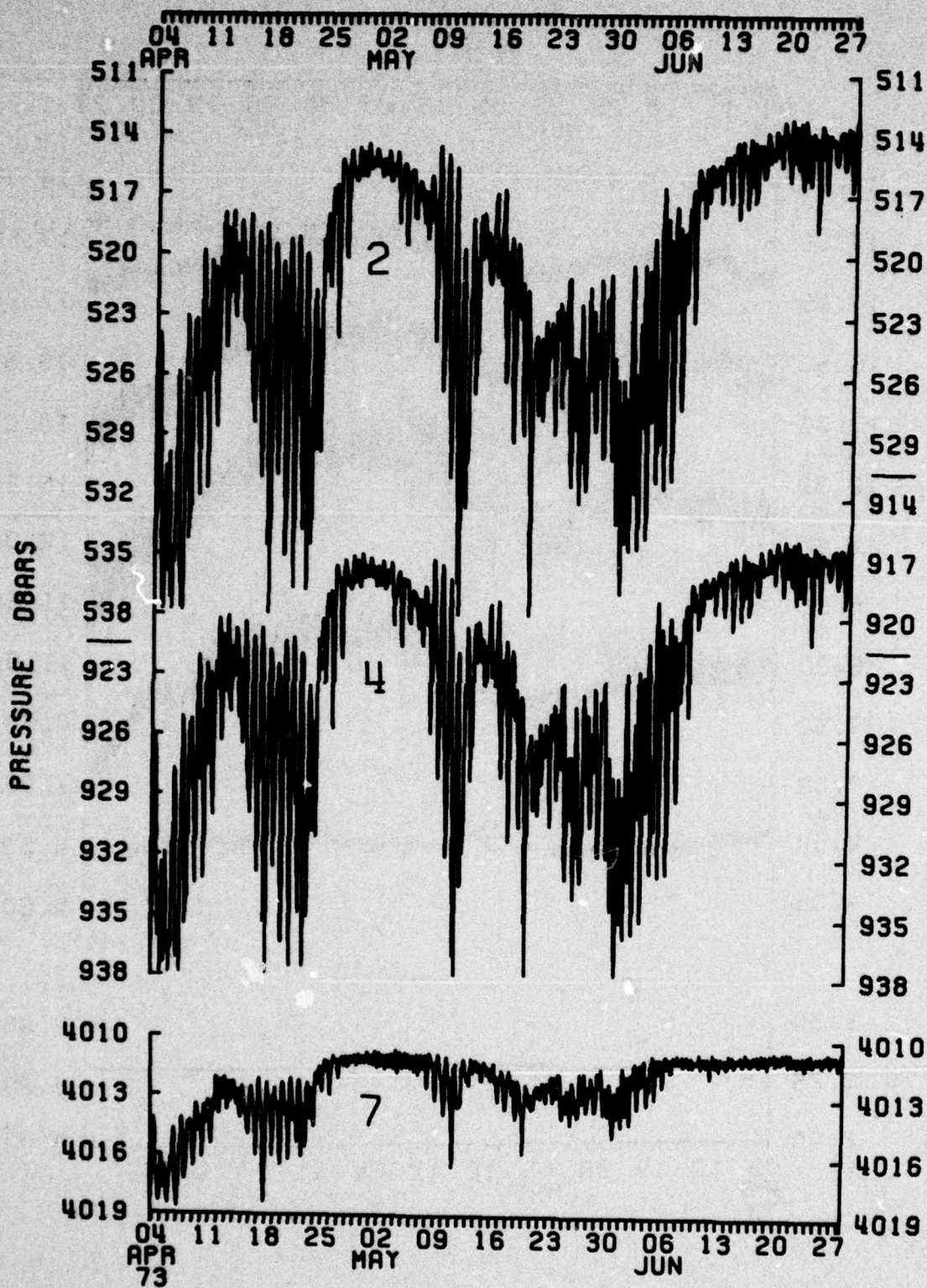
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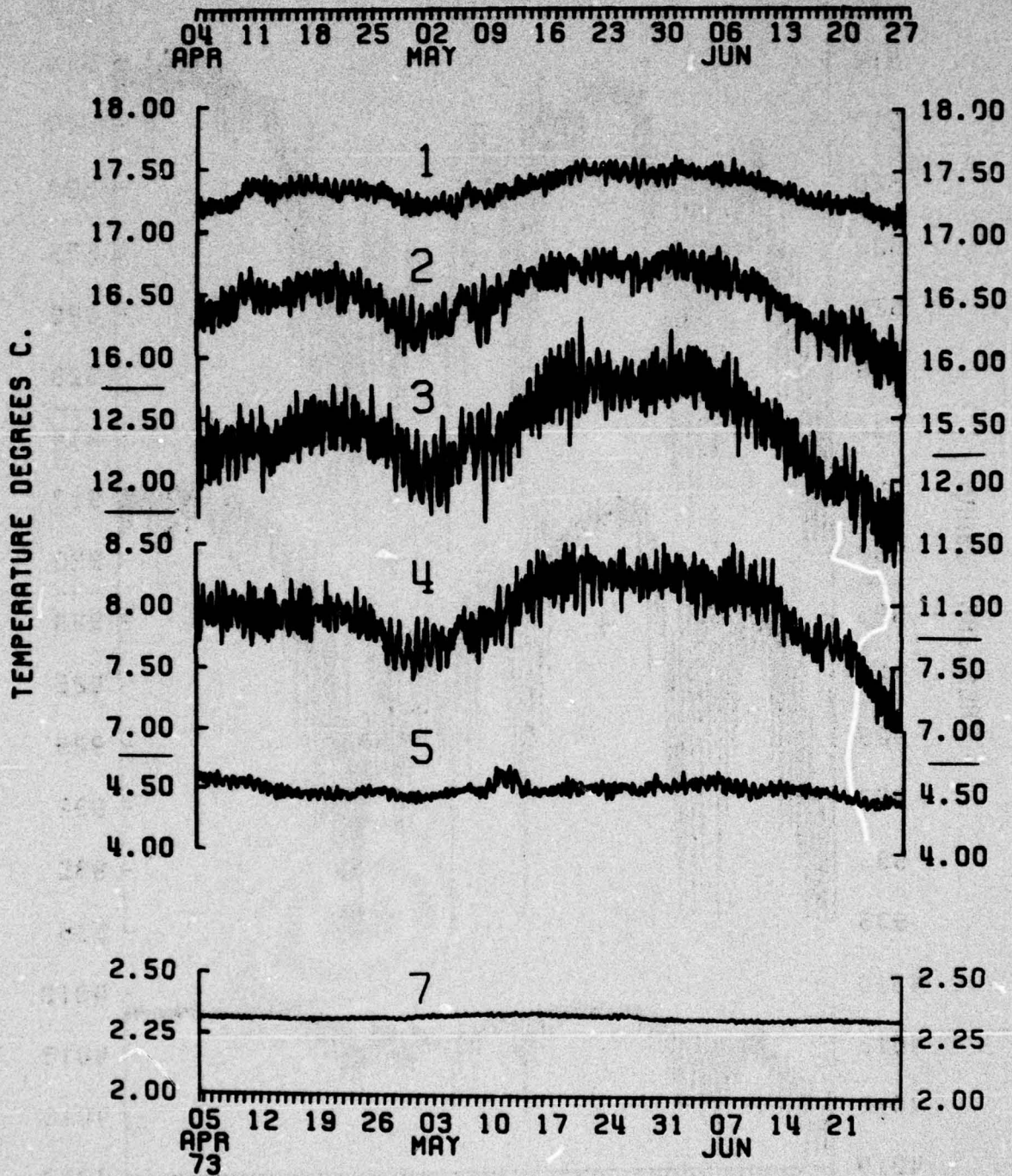
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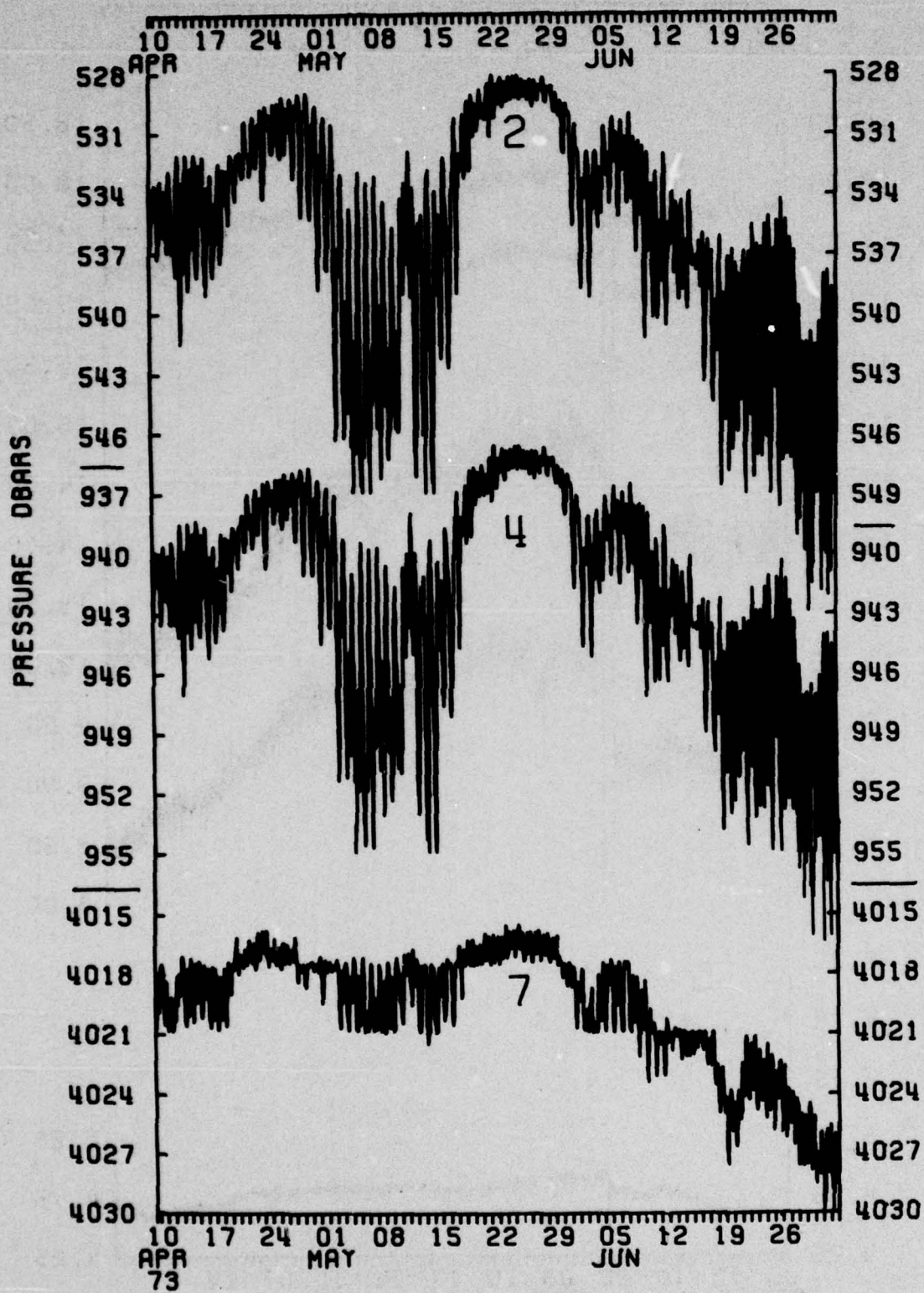
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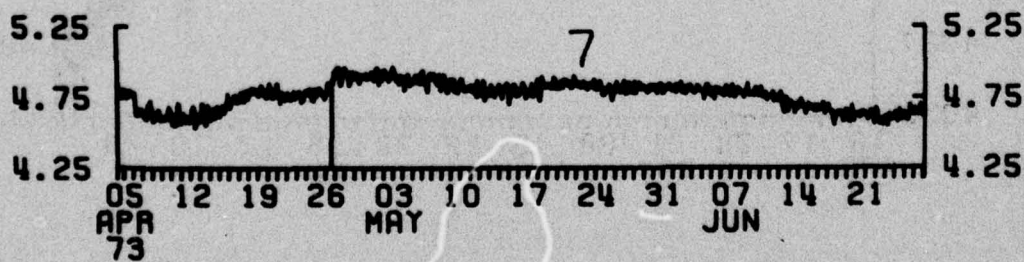
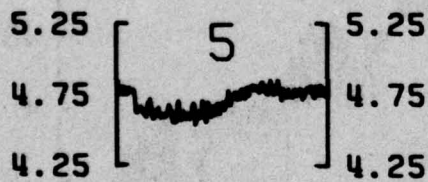
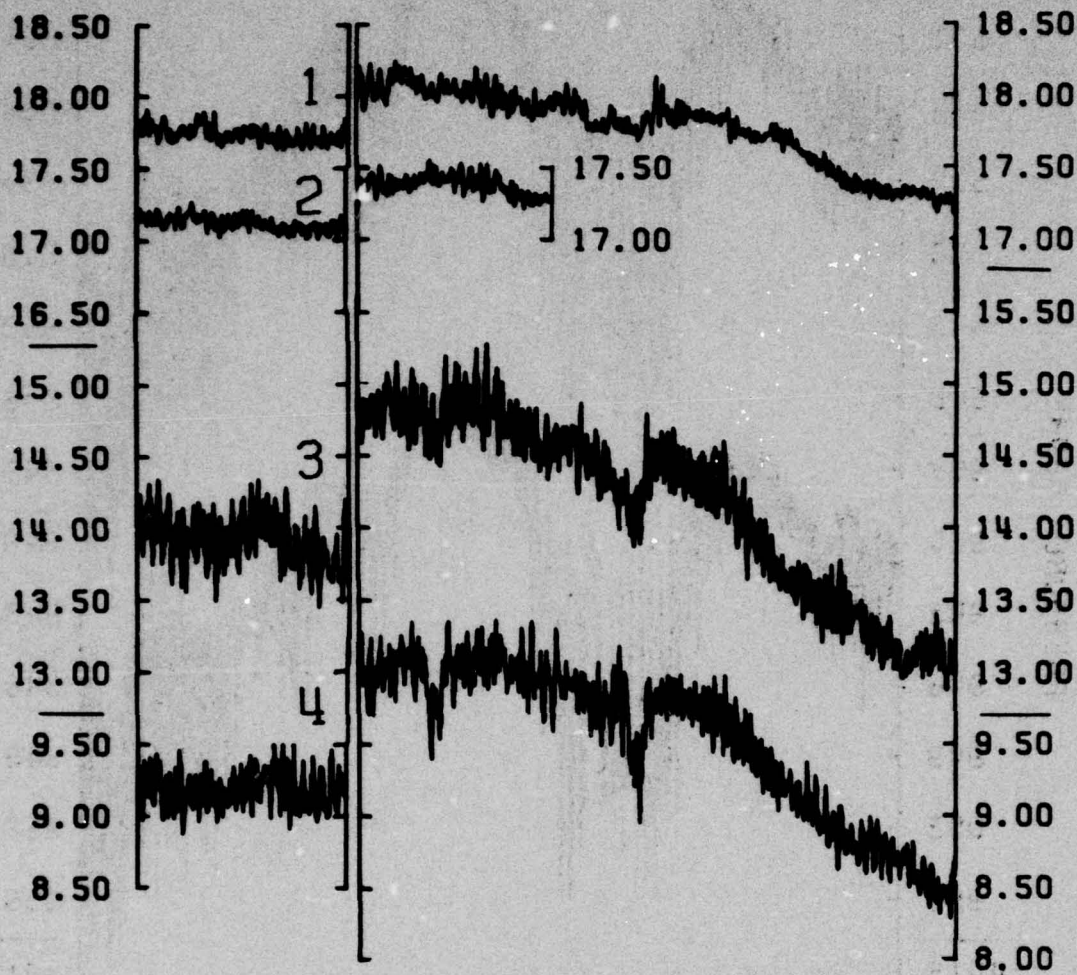
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APR MAY JUN

TEMPERATURE DEGREES C.

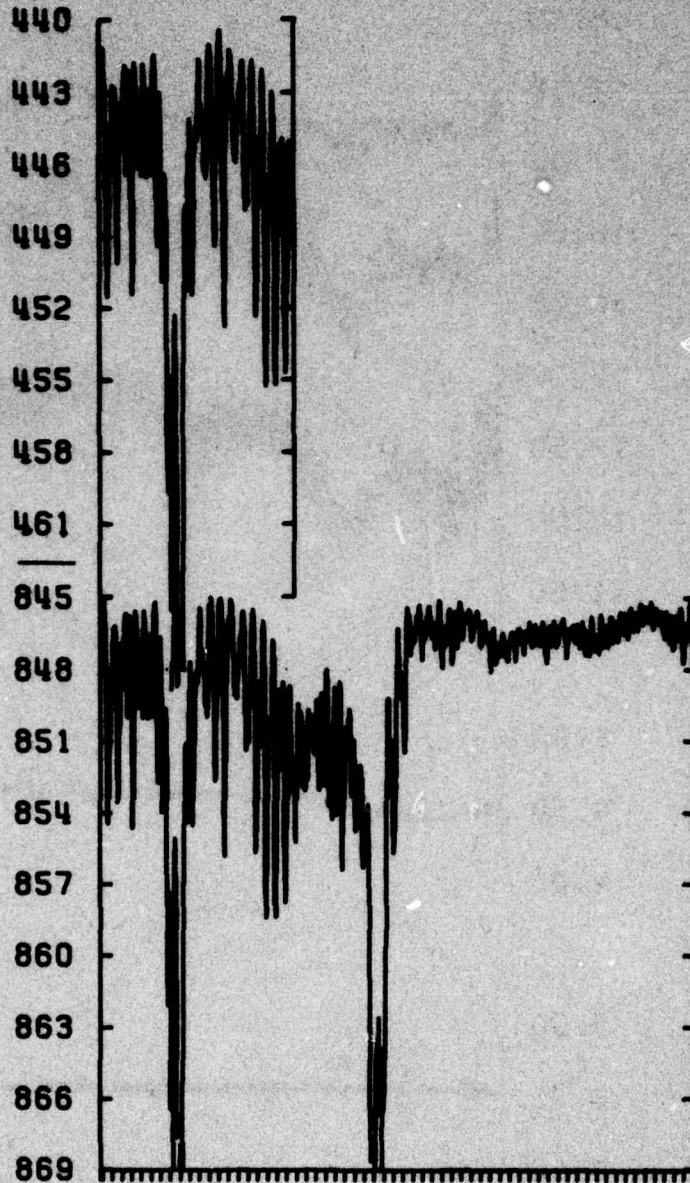
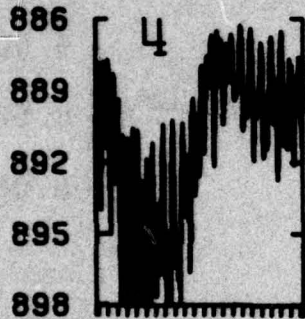
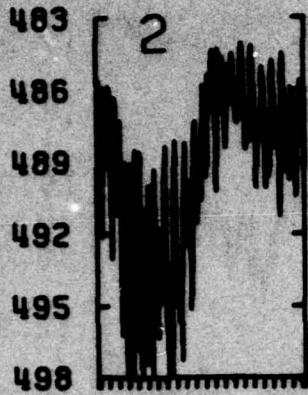


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MAY JUN

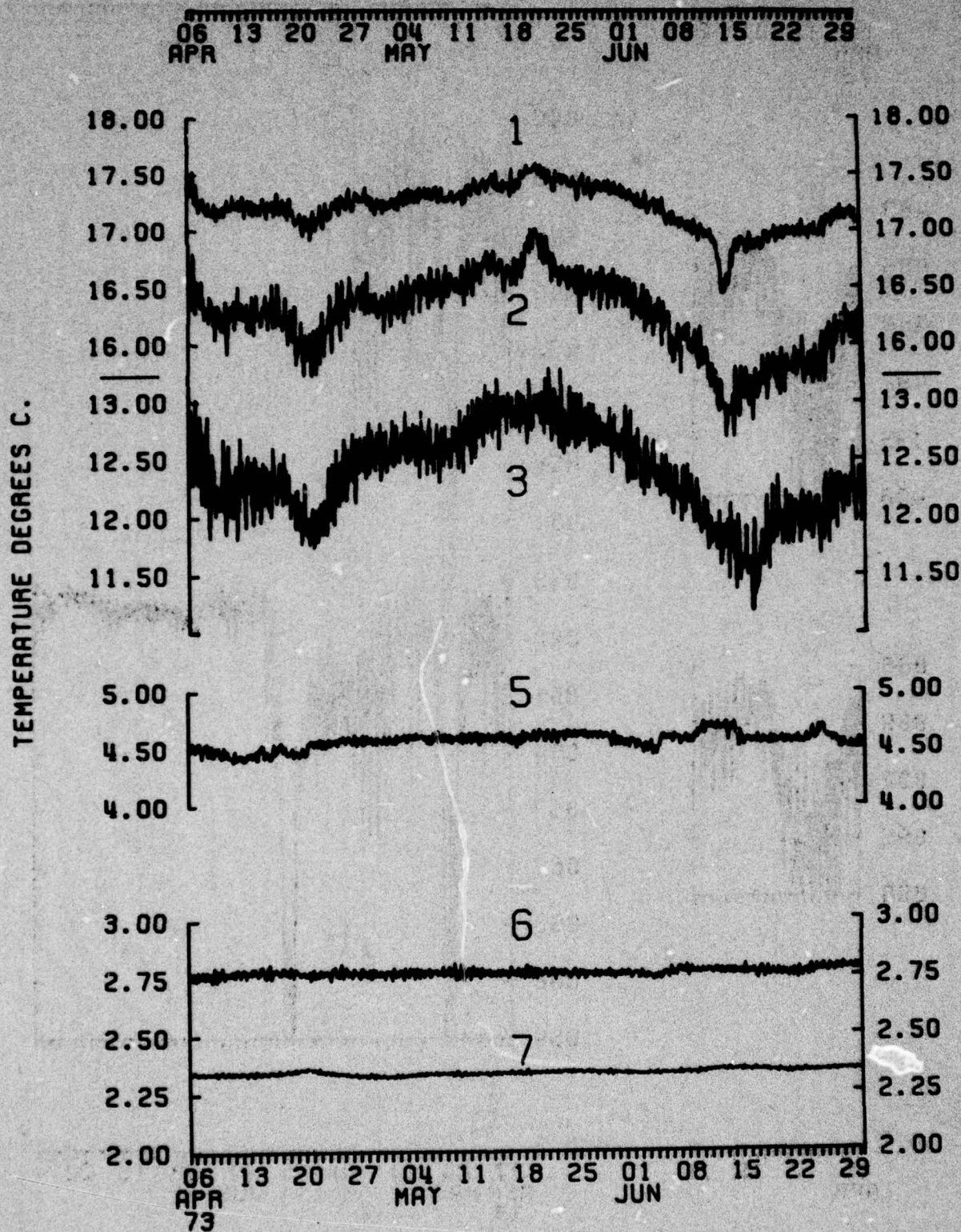
PRESSURE DBARS



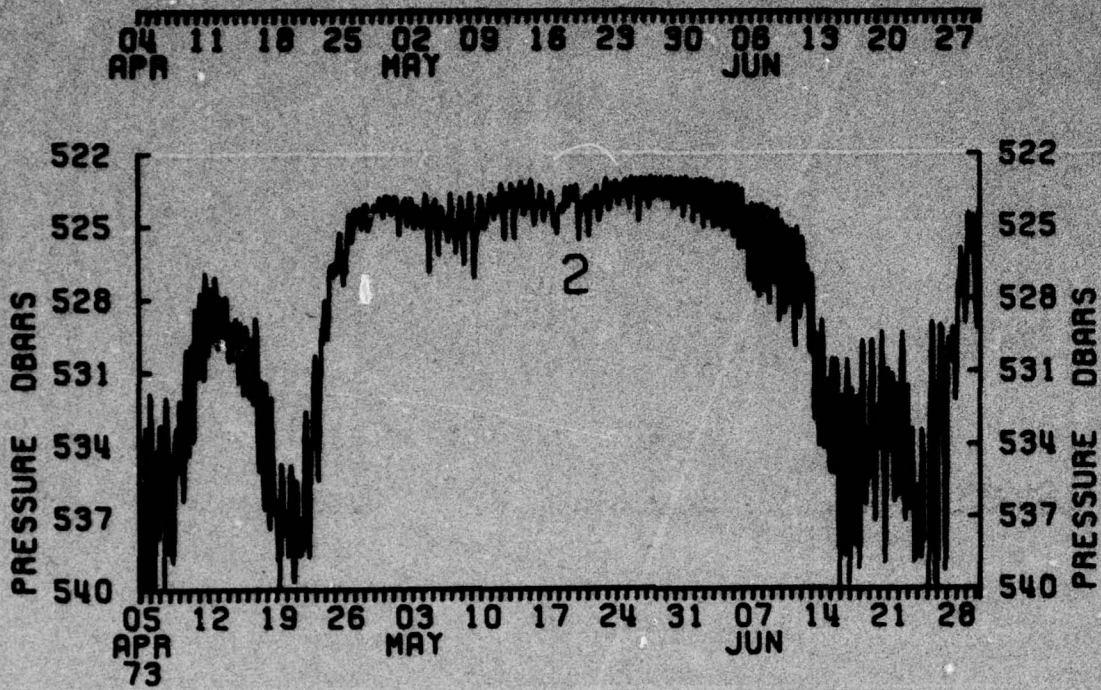
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APR MAY JUN 73

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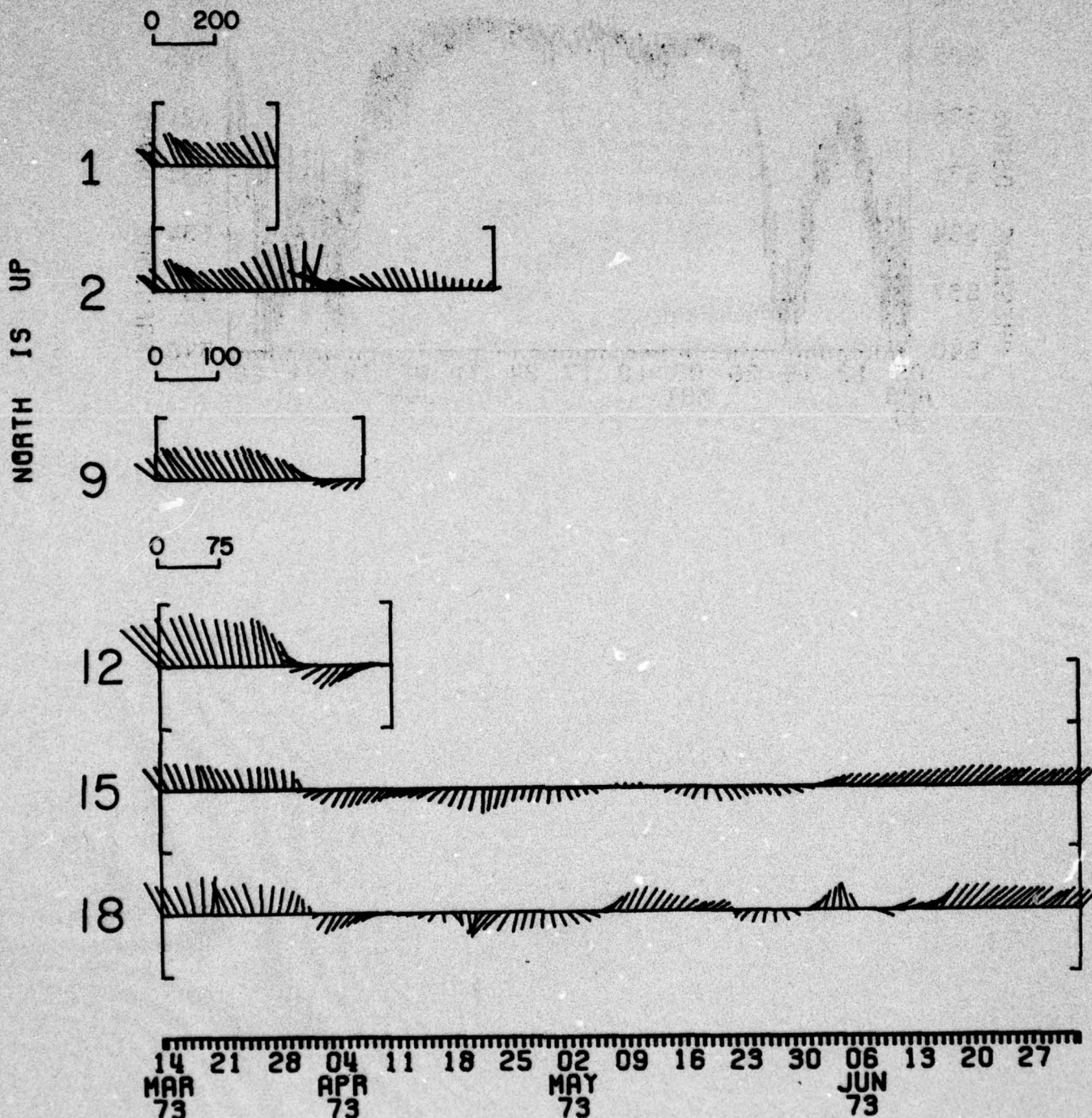


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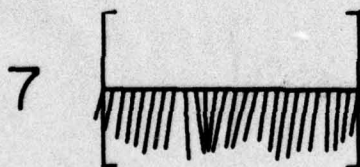
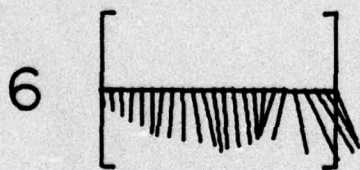


482

21 28 04
APR

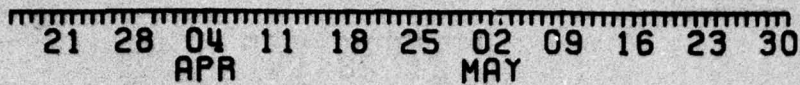
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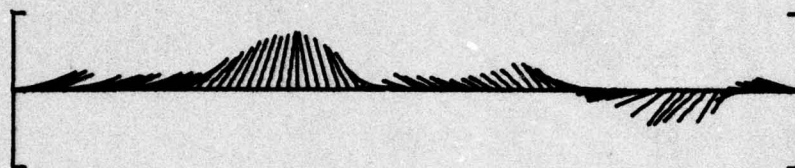
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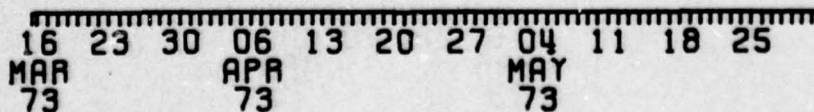
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WOODS HOLE OCEANOGRAPHIC INSTITUTION MASS

F/G 8/3

A COMPILATION OF MOORED CURRENT DATA AND ASSOCIATED OCEANOGRAPH--ETC(U)

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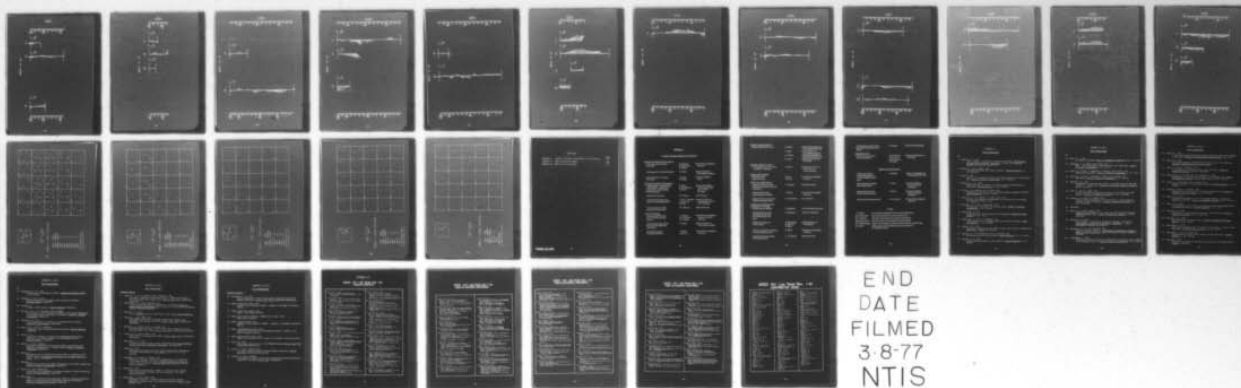
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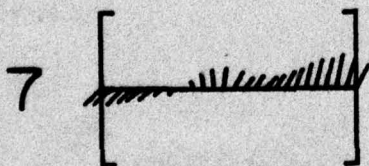


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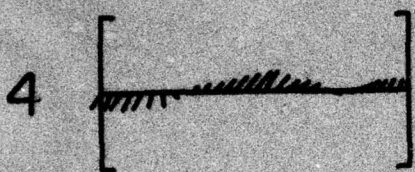
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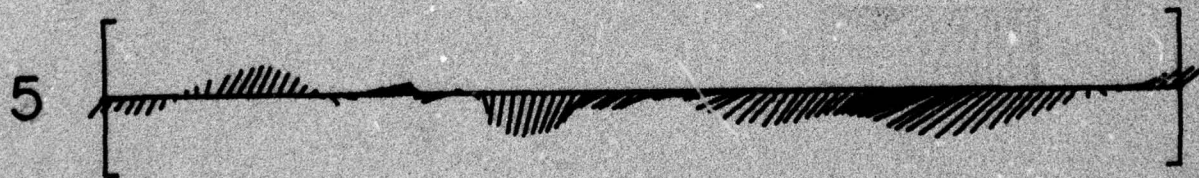
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APR MAY JUN

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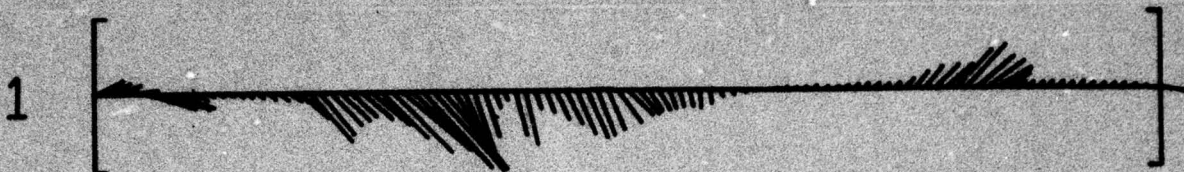


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MAR 73 APR 73 MAY 73 JUN 73

488

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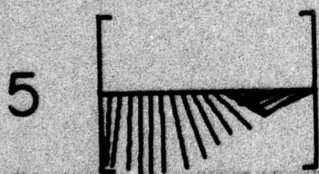


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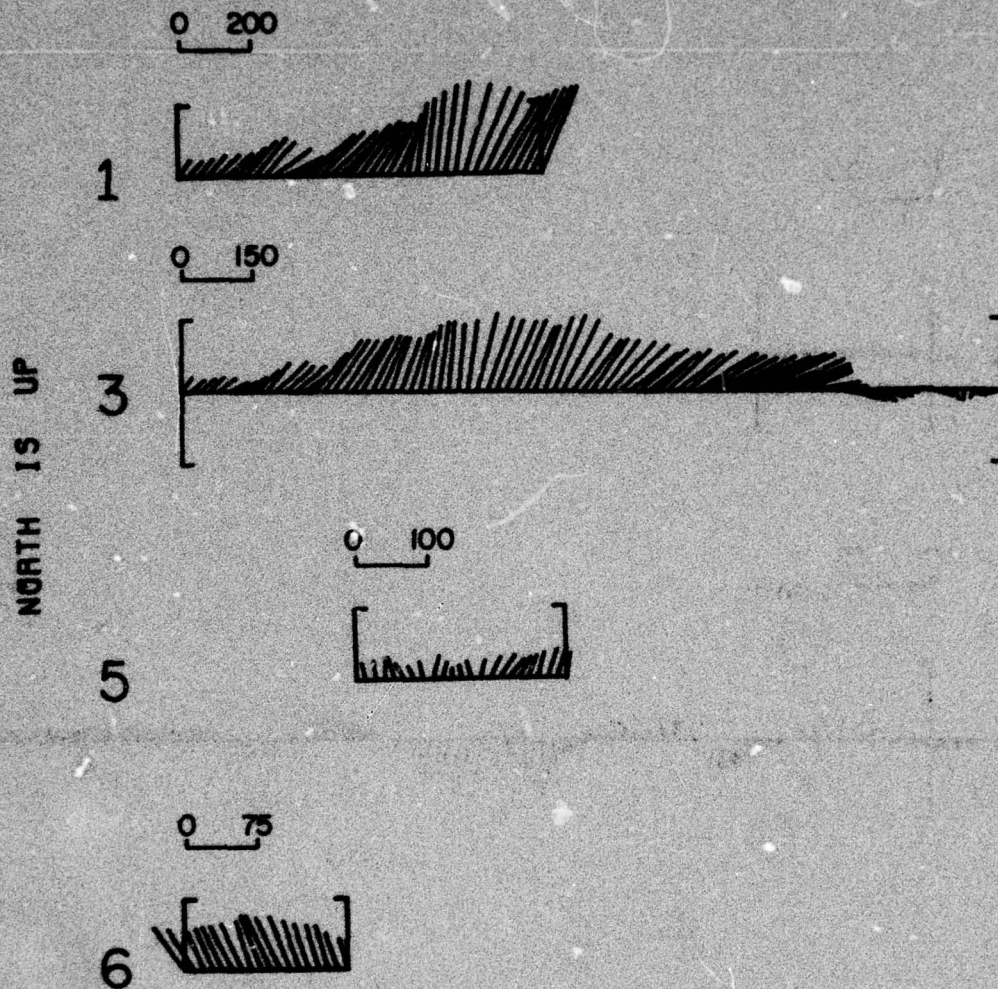


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MAR APR MAY JUN
73

493

04 11 18 25 02 09 16
APR MAY

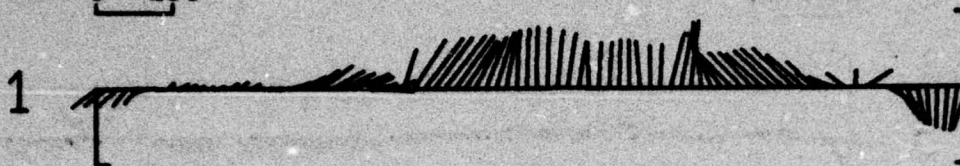


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APR MAY
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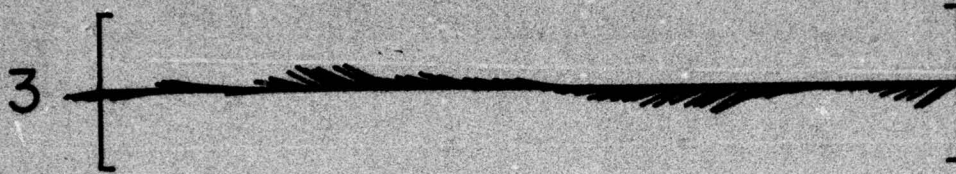
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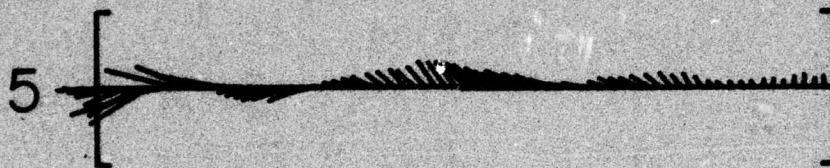
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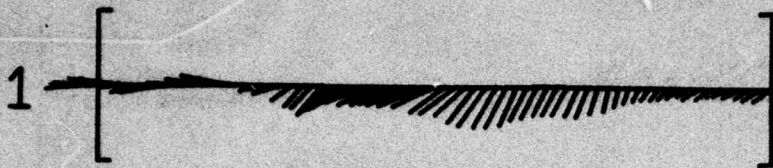
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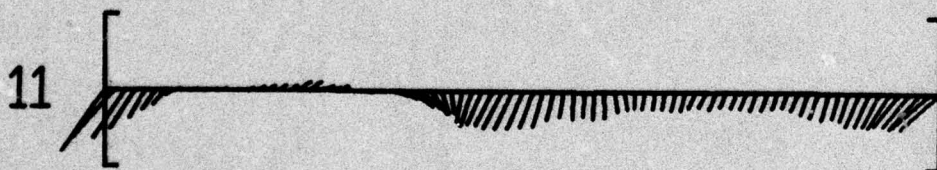
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MAY JUN

0 200



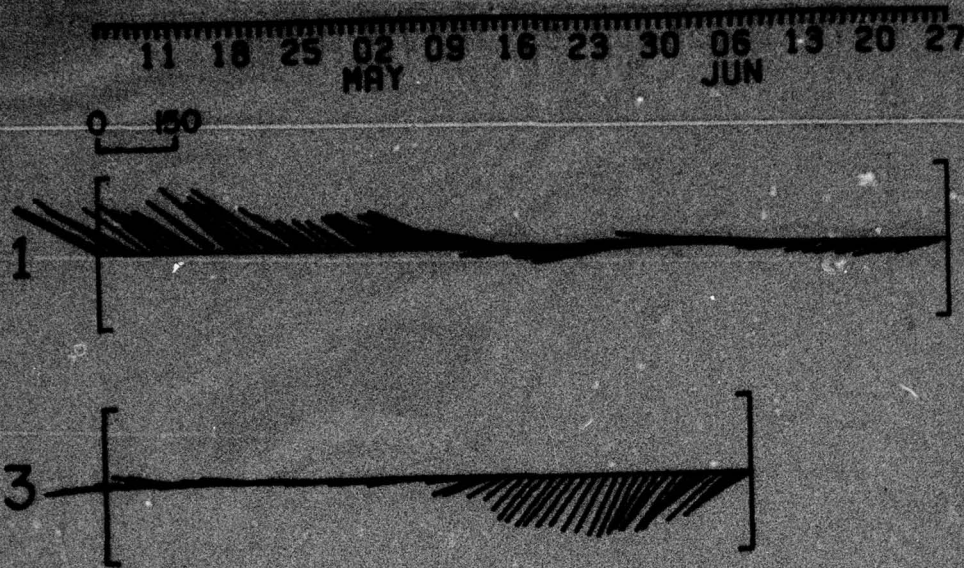
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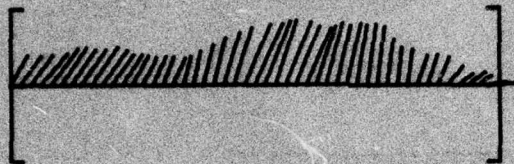
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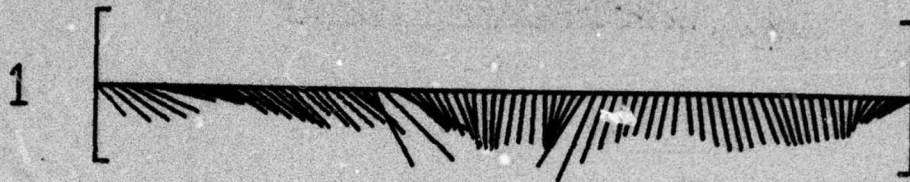
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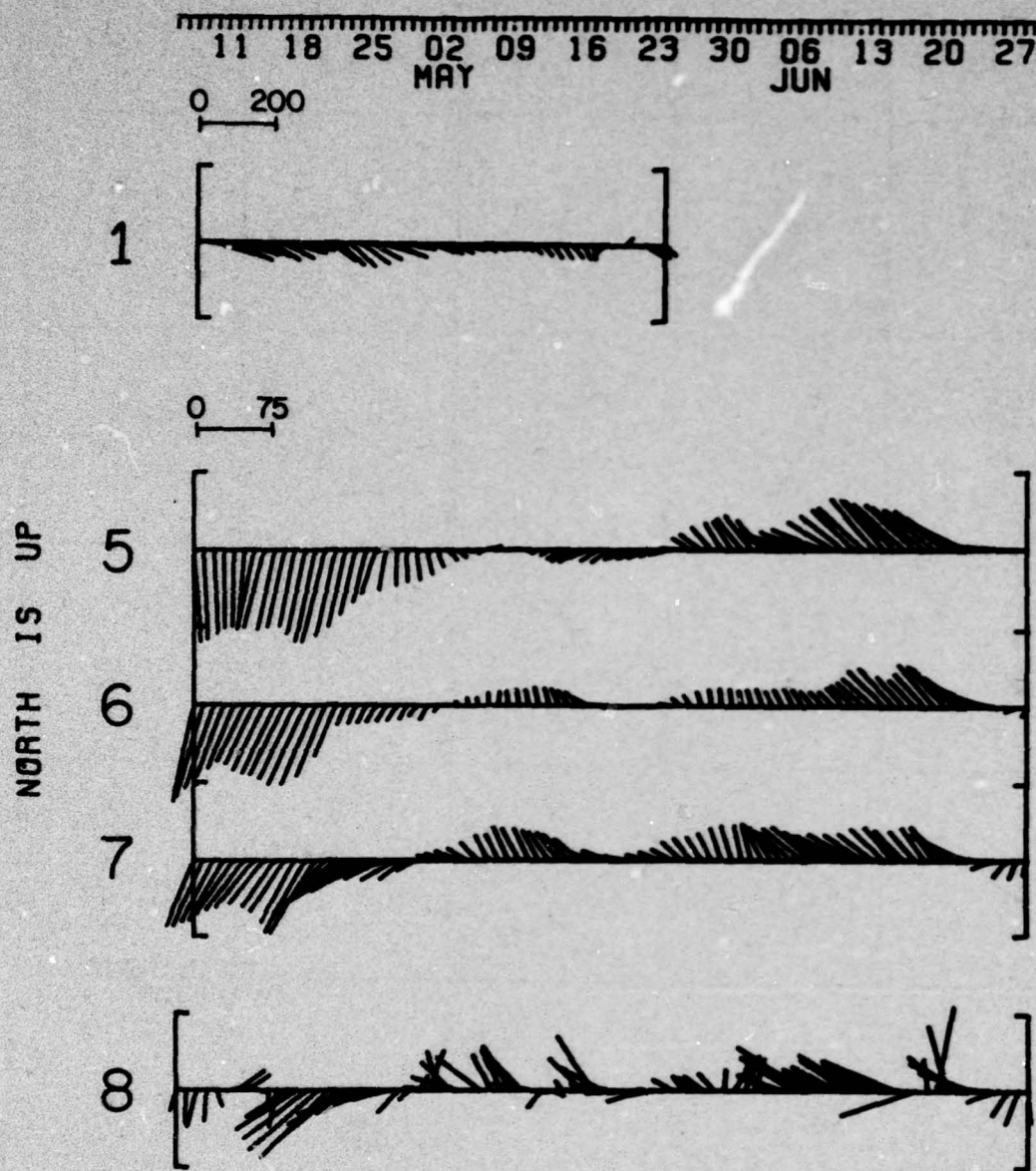
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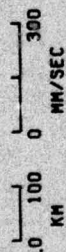
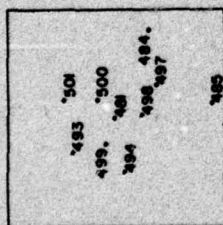


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APR 73 MAY 73 JUN 73

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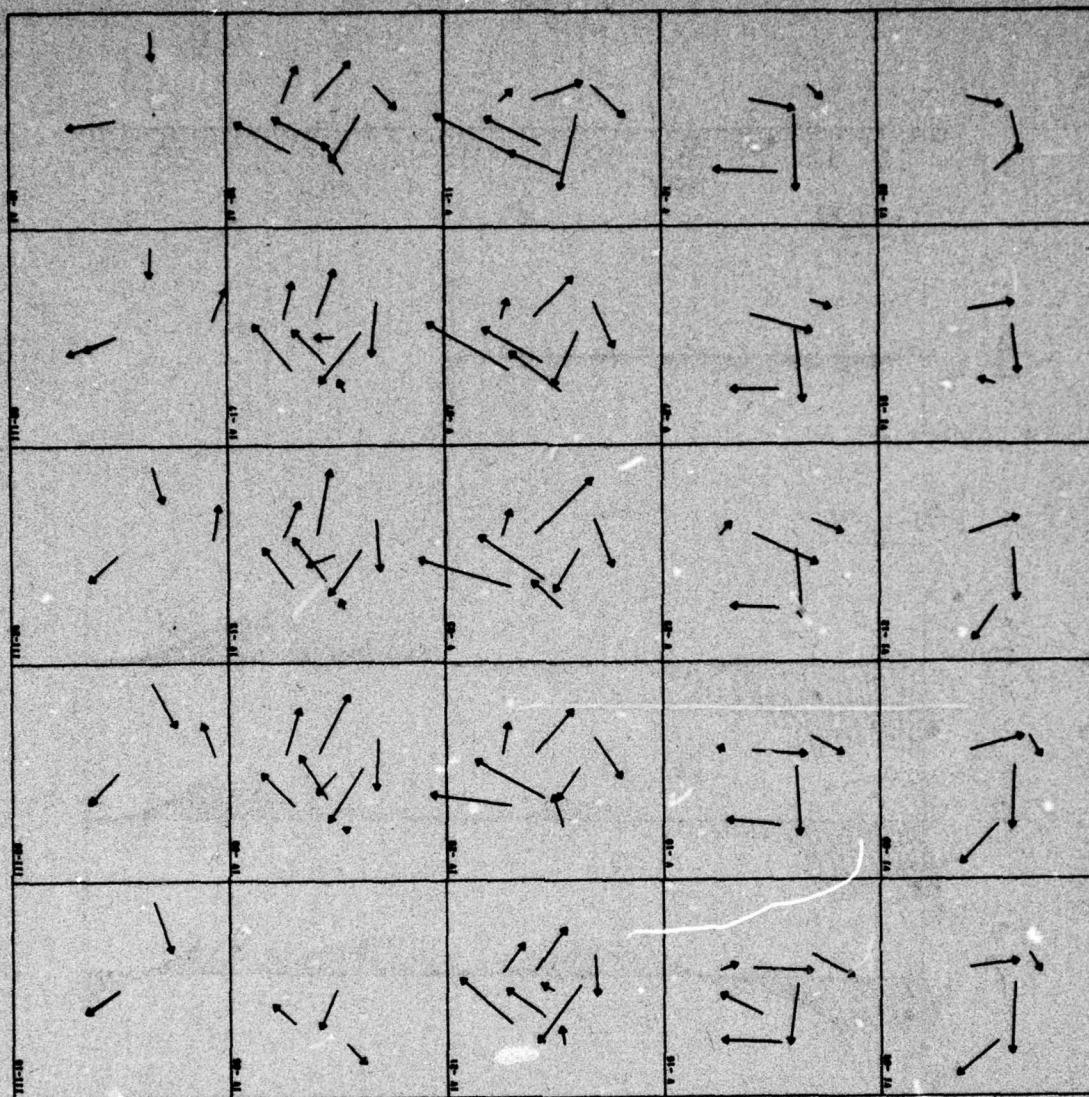


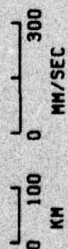
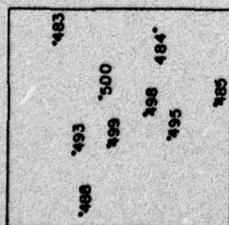


MODE-1 500 METERS

WHOI	MODE
DATA	MOORING
NUMBER	NUMBER
4811	1
4812	1
4841	16
4851	11
4931	6
4941	5
4971	9
4981	4
4991	3
5001	2
5011	7

PLOT CENTER POINT
27 58.0 N 69 41.6 W

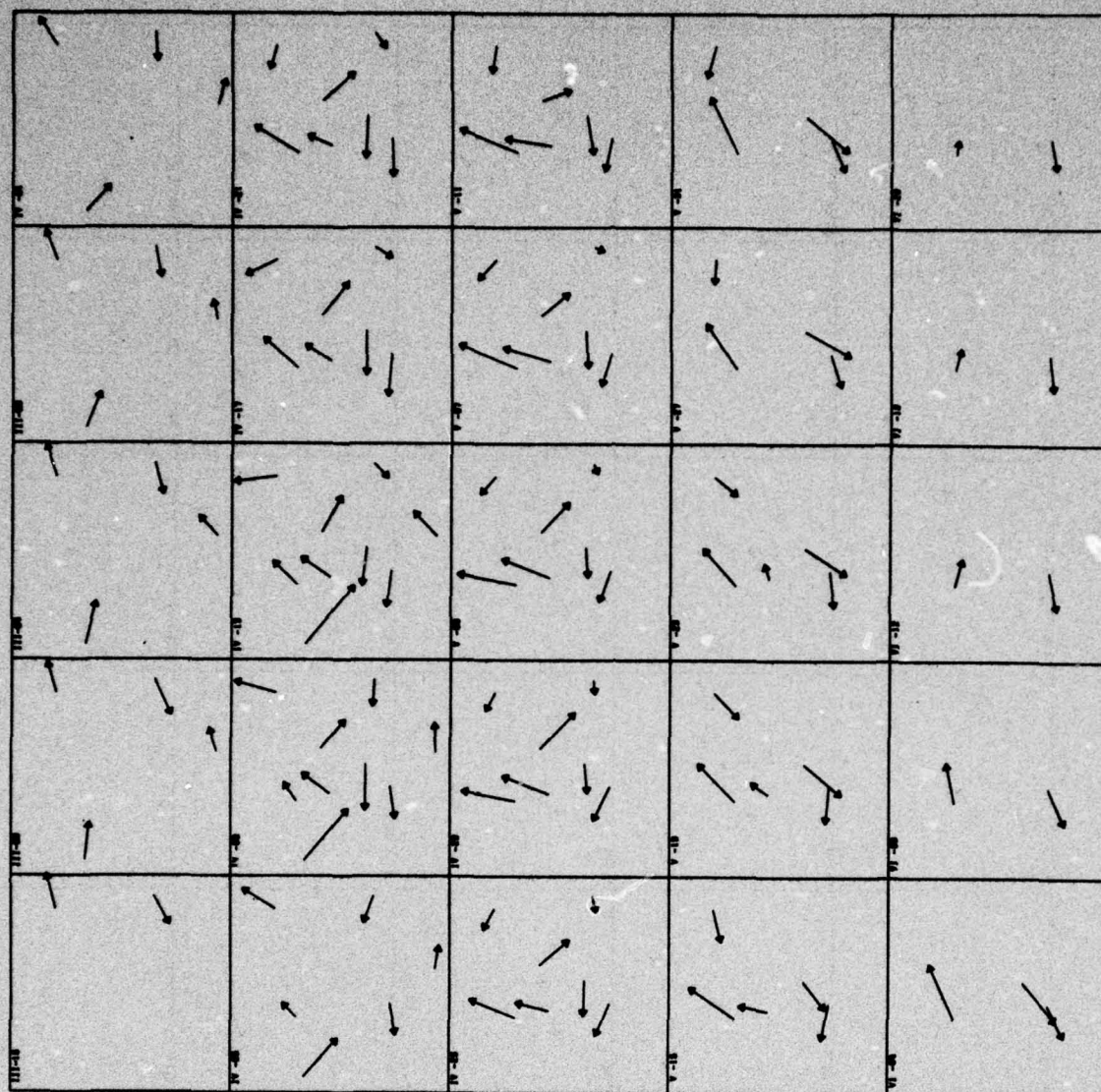


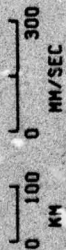


MODE-1 800 METERS

WHOI	MODE
DATA	MOORING
NUMBER	NUMBER
4833	15
4843	16
4853	11
4883	13
4933	6
4953	10
4983	4
4993	3
5003	2

PLOT CENTER POINT
27 58.0 N 69 41.6 W

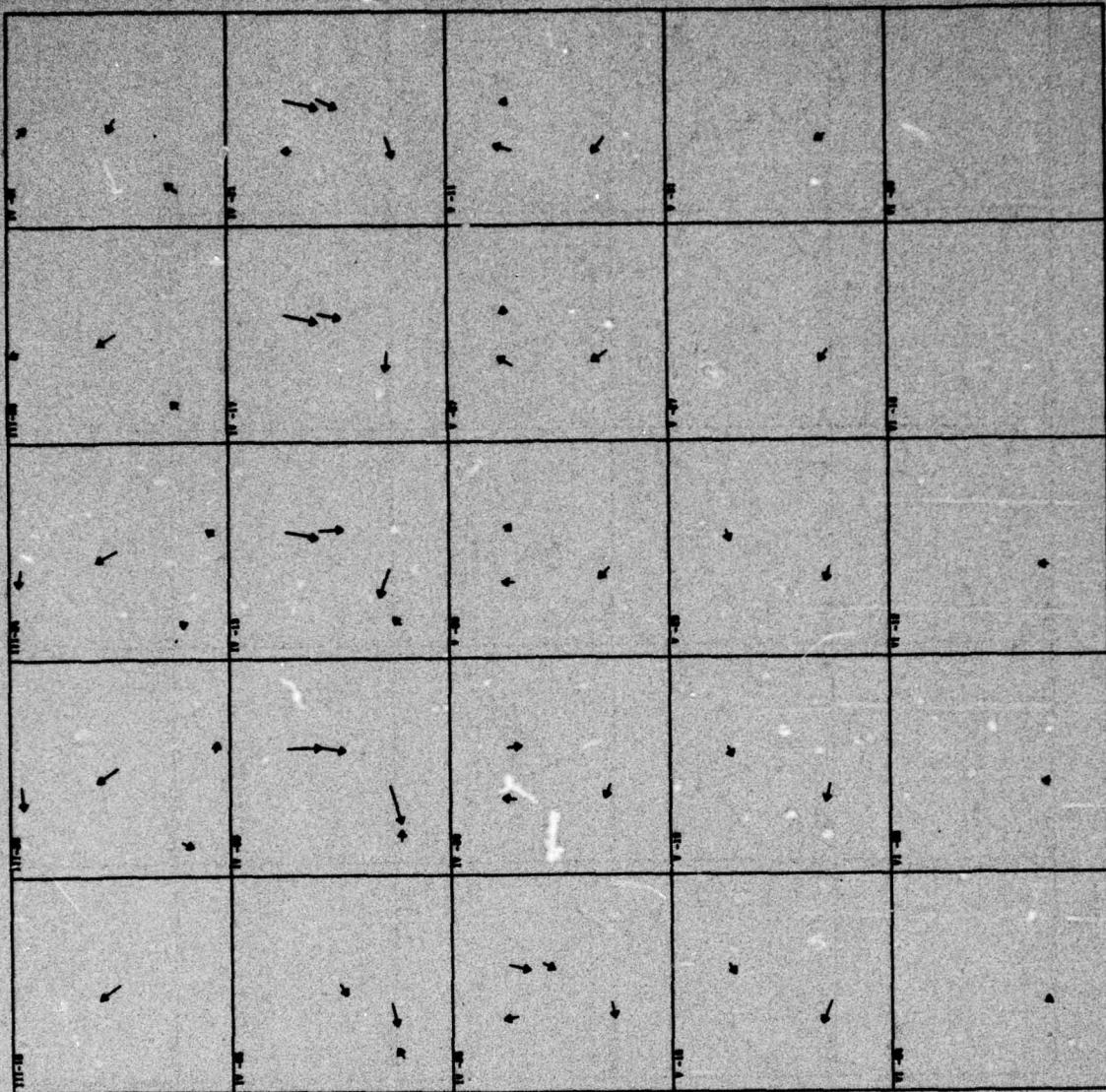


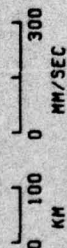
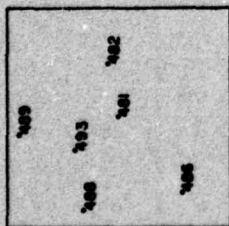


MODE-1 1500 METERS

WHOI	MODE
DATA	MOORING
NUMBER	NUMBER
4819	1
4856	11
4864	12
4894	14
4935	6
4955	10
5005	2
5015	7

PLOT CENTER
27 58.0 N 69 41.6 W



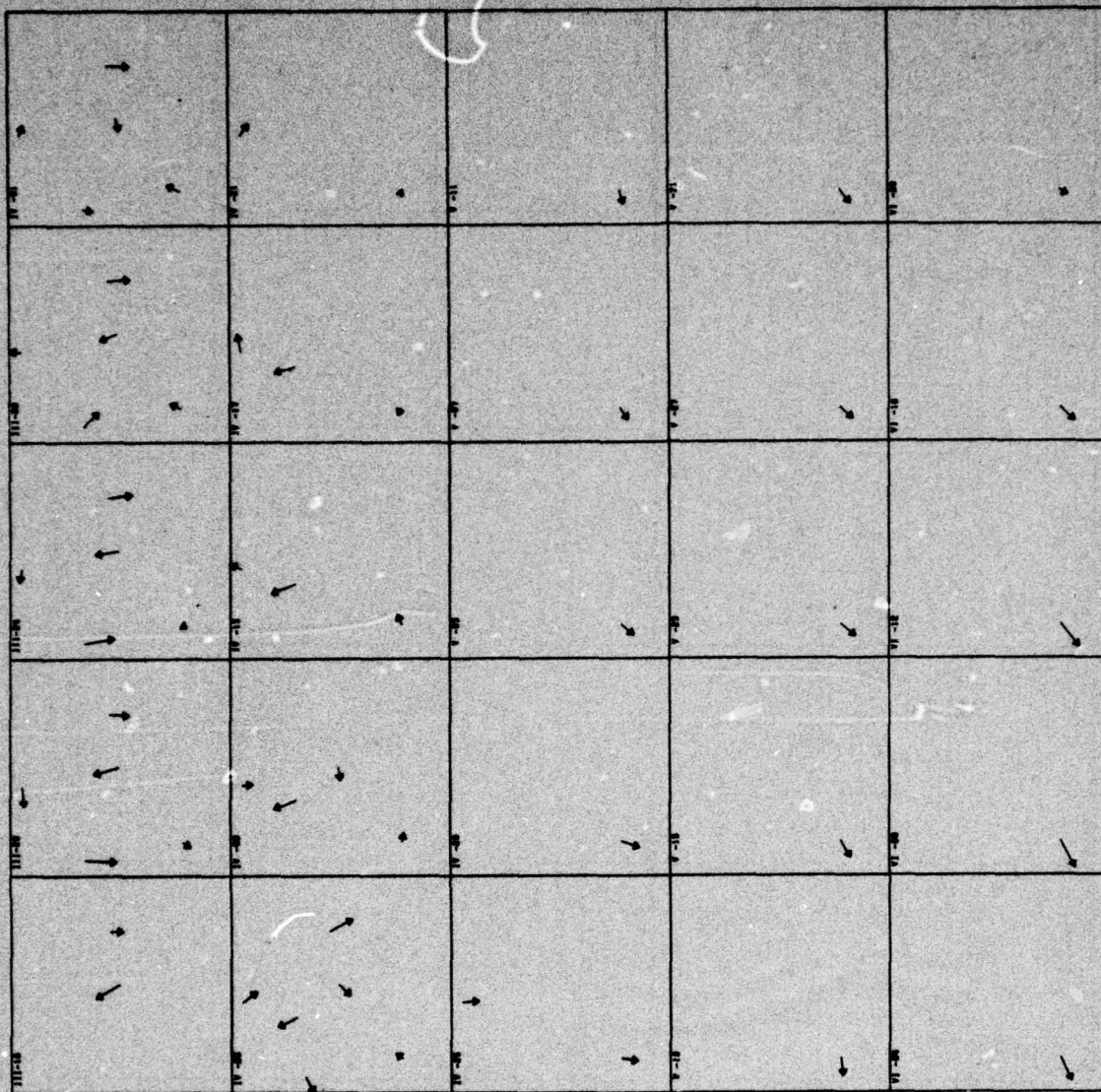


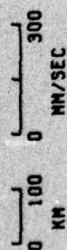
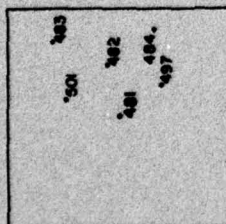
277

MODE-1 3000 METERS

WHOI	MODE
DATA	MOORING
NUMBER	NUMBER
481, 12	1
4826	8
4865	12
4885	13
4895	14
4936	6

PLOT CENTER POINT
27 58.0 N 69 41.6 W

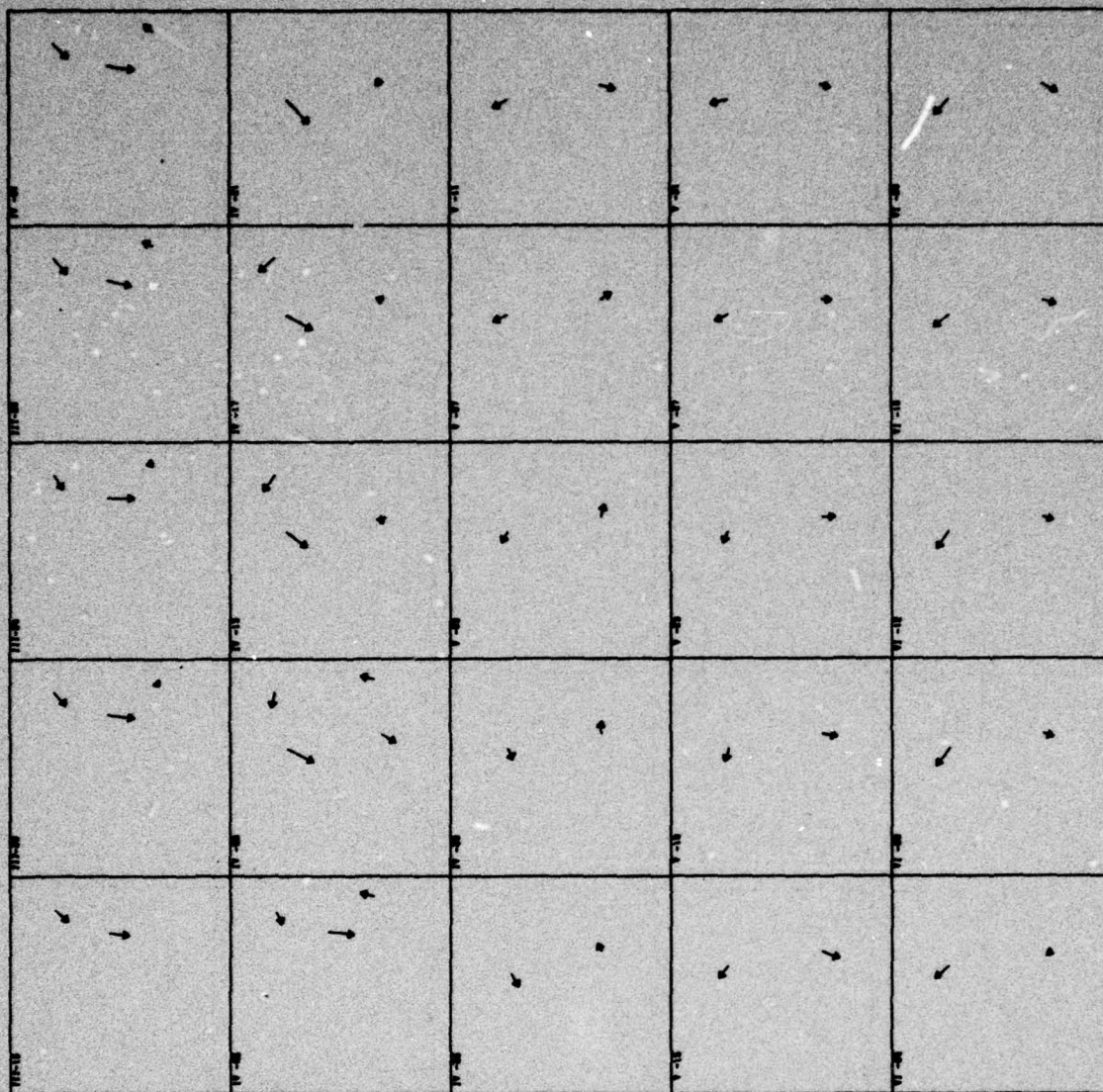


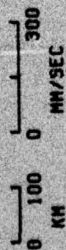
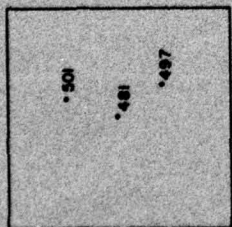


MODE-1 4000 METERS

WHOI	MODE
DATA	MOORING
NUMBER	NUMBER
481.15	1
4827	8
4837	15
4847	16
497.11	9
5017	7

PLOT CENTER POINT
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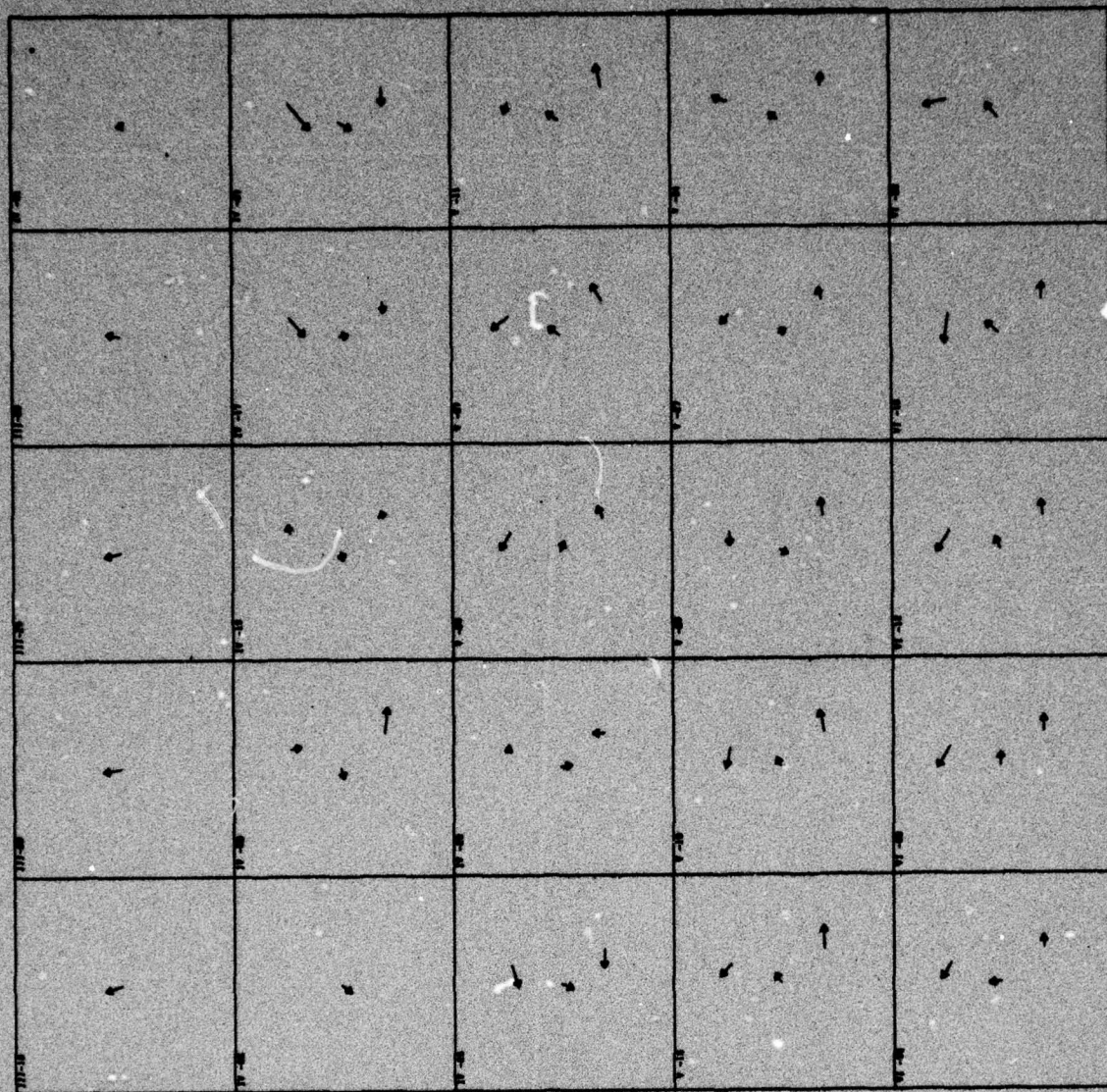




MODE-1 5000 METERS

WHOI	MODE
DATA	MOORING
NUMBER	NUMBER
481.18	1
497.13	9
5018	7

PLOT CENTER
27 58.0 N 69 41.6 W



Appendixes

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Appendix I Project's Principal Investigators and Institutions	282
Appendix II MODE Contribution Numbers	285
Appendix III MODE Hot Line News Index	293

APPENDIX I

1. Projects, Principal investigators and Institutions

MOORED CURRENT METER ARRAYS

16 moorings with 4-8 current meters each

N. Fofonoff,
W. Schmitz and
F. Webster

Woods Hole Oceanographic
Institution

5 moorings with 4 current meters each

J. Swallow

National Institute of
Oceanography, England

8 moorings with 1 or 2 current meters each

J. Knauss
W. Sturges

University of Rhode
Island

BOTTOM MOUNTED INSTRUMENTS

2 IGPP capsules, 1 month lifetime,
1 IGPP capsule, 1 year lifetime
(temperature, current, pressure
bottom kilometer)

W. Munk,
F. Snodgrass and
W. Brown

Institute of Geophysics
and Planetary Physics,
Univ. of Calif.,
San Diego

6 inverted echo sounders

H. T. Rossby

Yale University

3 electric field recorders, and 3
bottom mounted magnetometers

C. Cox, V. Vacquier,
J. Filloux and
R. Parker

Scripps Institution of
Oceanography, Univ. of
Calif., San Diego

5 bottom pressure recorders
(fused silica bourdon type)

D. J. Baker, Jr.

Harvard University

FLOAT TRACKING

20 long-range SOFAR type
floats using MILS listening
stations

A. Voorhis,
D. C. Webb and
H. T. Rossby

Woods Hole Oceanographic
Institution and Yale
University

36 intermediate range acoustic
floats tracked by shipborne
hydrophones

J. Swallow

National Institute of
Oceanography, England

Hydrophone arrays for
locating SOFAR floats

R. Walden
H. Bertaux

Woods Hole Oceanographic
Institution

DENSITY MEASUREMENTS
Shipboard STD and CTD casts

D. Hansen	Atlantic Oceanographic and Meteorological Laboratory
J. Crease	National Institute of Oceanography, England
A. Leetmaa	Atlantic Oceanographic and Meteorological Laboratory
R. Scarlet	Massachusetts Institute of Technology

MOORED THERMAL ARRAY
60 temperature-pressure recorders
(on W.H.O.I. moorings)

C. Wunsch	Massachusetts Institute of Technology and Draper Laboratory
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TOWED INSTRUMENTS
STD tows to map isopycnal surfaces

E. Katz	Woods Hole Oceanographic Institution
R. Nowak	

FREE FALL INSTRUMENTS
Velocity profilers acoustically tracked by using bottom mounted transponders

T. Pochapsky	Columbia University
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Electric field free falling probe and bottom recorders

T. Sanford	Woods Hole Oceanographic Institution
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Displacement type current probe
Airborne expendable (2000)

W. S. Richardson	Nova University
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NUMERICAL MODELING AND THEORETICAL STUDIES
Synoptic maps for MODE-I

F. Bretherton	The Johns Hopkins University
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Interactions between short internal gravity waves and larger scale motions in the ocean

K. Hasselmann	University of Hamburg
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MODE array design as an inverse problem

M. Hendershott, R. Davis and W. Munk	Scripps Institution of Oceanography
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Theory and computer experiments on oceanic eddies and waves

P. Rhines	Woods Hole Oceanographic Institution
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Analytic and numerical studies of mesoscale motions

A. R. Robinson	Harvard University
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A theoretical-numerical study of
geostrophic eddy motions in the
oceans

P. Welander

University of Gothenburg

ADMINISTRATIVE

Funds for travel, executive
officer, meetings, etc.

H. Stommel and
D. Moore (on
leave from Nova
University)

Massachusetts Institute of
Technology

Additional Associated Projects

5 Filloux-type bottom
mounted tide gauges and
1 Hewlett Packard pressure
gauge

H. Mofjeld

Atlantic Oceanographic and
Meteorological Laboratory

Monitoring earth's magnetic
field at island stations

J. Larsen

University of Hawaii,
Hawaii Institute of
Geophysics

Bottom mounted vertical
electric field measurements

R. Harvey

University of Hawaii,
Hawaii Institute of
Geophysics

Bottom mounted magnetometers

R. Von Herzen

Woods Hole Oceanographic
Institution

2. Ships

R/V CHAIN

Woods Hole Oceanographic Institution, Woods Hole, Mass.

R/V EASTWARD

Duke University Marine Laboratory, Beaufort, N.C.

R/V TRIDENT

University of Rhode Island, Narragansett, Rhode Island

RRS DISCOVERY

National Institute of Oceanography, Wormley, England

R/V RESEARCHER

Atlantic Oceanographic and Meteorological Laboratory, Miami, Florida

R/V HUNT

MODE charter from TRACOR/Marine Acoustical Services,
Ft. Lauderdale, Florida

APPENDIX II

MODE CONTRIBUTIONS

No.

1. Scarlet, R. I., 1973
STD's in MODE -- A Grab-Bag of Calibration Problems, Proceedings of the Second STD Conference (Supplement), Plessey, Environmental Systems, San Diego CA, January 1973.
2. Wunsch, C., and J. Dahlen, 1974
A Moored Temperature and Pressure Recorder, Deep-Sea Research, 21 (2), 145-154.
3. Katz, E., 1973
Profile of an Isopycnal Surface in the Main Thermocline of the Sargasso Sea, Journal of Physical Oceanography, 3 (4), 448-457.
4. Dantzler, L., Jr., 1974
Dynamic Salinity Calibration of Continuous Salinity/Temperature/Depth Data, Deep-Sea Research, 21 (8), 675-682.
5. Gould, J., W. Schmitz, and C. Wunsch, 1974
Preliminary Field Results for a Mid-Ocean Dynamics Experiment (MODE-O), Deep-Sea Research, 21 (11), 911-932.
6. Baker, D. J., R. B. Wearn, Jr., and W. Hill, 1973
Pressure and Temperature Measurements at the Bottom of the Sargasso Sea, Nature 245 (141), 25-26.
7. Robinson, A. R., and J. McWilliams, 1974
The Baroclinic Instability of the Open Ocean, Journal of Physical Oceanography, 4 (3), 281-294.
8. McWilliams, J., 1973
Forced Transient Flow and Small-Scale Topography, Geophysical Fluid Dynamics, 6 (1), 49-79.
9. McWilliams, J., and A. R. Robinson, 1974
A Wave Analysis of the Polygon Array in the Tropical Atlantic, Deep-Sea Research, 21 (5), 359-368.
10. Bryden, H. L., 1974
Geostrophic Comparisons Using MODE-I Moored Current Meter and Temperature Measurements, Nature 251, 409-410.
11. Swallow, J., B. S. McCartney, and N. W. Millard, 1974
The Minimode Float Tracking System, Deep-Sea Research, 21 (7), 573-595.
12. Scarlet, R. I., 1975
A Data Processing Method for STD Profiles, Deep-Sea Research, 22 (7), 509-515.

APPENDIX II (cont.)

MODE CONTRIBUTIONS

- No.
13. Katz, E. J., 1975
Tow Spectra from MODE, Journal of Geophysical Research, 80 (9), 1163-1167.
 14. Snodgrass, F., W. Brown, and W. Munk, 1975
MODE: IGPP Measurements of Bottom Pressure and Temperature, Journal of Physical Oceanography, 5 (1), 63-74.
 15. Brown, W., W. Munk, F. Snodgrass, H. Mofjeld, and B. Zetler, 1975
MODE Bottom Experiment, Journal of Physical Oceanography, 5 (1), 75-85.
 16. Zetler, B., W. Munk, H. Mofjeld, W. Brown, and F. Dormer, 1975
MODE Tides, Journal of Physical Oceanography, 5 (1), 430-441.
 17. Sanford, T. B., 1974
Observations of Strong Current Shears in the Deep Ocean and Some Implications on Sound Rays, Journal of the Acoustic Society of America, 56 (4), 1118-1121.
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